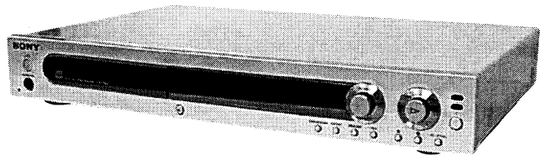
HAR-LH500

SERVICE MANUAL

AEP Model
UK Model

Ver 1.0 2003. 08



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CD Section	Model Name Using Similar Mechanism	NEW
	CD Mechanism Type	FX54
HDD Section	Model Name Using Similar Mechanism	NEW
	HD Mechanism Type	U9

SPECIFICATIONS

CD player section

System	Compact disc and digital audio system
Laser	Semiconductor laser (λ = 780 nm) Emission duration: continuous
Frequency response	5 Hz – 20 kHz (±0.5 dB)
Signal-to-noise ratio	More than 95 dB
Wow and flutter	Below measurable limit

HDD section

Capacity	80 GB
Recording system	LINEAR PCM/ATRAC 3
Maximum recording time	About 1,340 h (ATRAC3) About 125 h (LinearPCM)
Maximum number of albums	999
Maximum number of tracks	40,000
Maximum number of tracks per album	400
Maximum CD-HDD ripping speed	Max. × 3 (ATRAC3) Max. × 12 (Linear PCM)

Input

	Jack type	Input impedance	Rated input	Minimum input
ANALOG IN	Phono jacks	47 kilohms	500 mVrms	125 mVrms
DIGITAL OPTICAL IN	Square optical connector jack	Optical wave length: 660 nm	—	—

Output

	Jack type	Rated output	Load impedance
ANALOG OUT	Phono jacks	2 Vrms (at 50 kilohms)	Over 10 kilohms
DIGITAL OPTICAL OUT	Square optical connector jack	—	Optical wave length: 660 nm

General

Power requirements	
European model:	230 V AC, 50/60 Hz
Power consumption	25 W
Dimensions (Approx.) (w/h/d)	430 × 65 × 288 mm incl. projecting parts and controls
Mass (Approx.)	4.3 kg

Supplied accessories

Digital optical cord (1)
Audio connecting cord (2)
Remote control (remote) (1)
Sony R6 (size AA) battery (2)
USB cable (1)
Be sure to use the supplied USB cable with ferrite cores when connecting to a computer.
"M-crew for HAR-LH500" CD-ROM (1)

Design and specifications are subject to change without notice.

HARD DISC AUDIO RECORDER

9-961-147-01 **Sony Corporation**
2003H1678-1 **Home Audio Company**

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SONY®

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SECTION 1
SERVICING NOTES

Notes on chip component replacement

- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

Flexible Circuit Board Repairing

- Keep the temperature of the soldering iron around 270 °C during repairing.
- Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
- Be careful not to apply force on the conductor when soldering or unsoldering.

CAUTION
Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

This appliance is classified as a CLASS 1 LASER product.
This label is located on the rear exterior.

CLASS 1 LASER PRODUCT
LUOKAN 1 LASERLAITE
KLASS 1 LASERAPPARAT

Laser component in this product is capable of emitting radiation exceeding the limit for Class 1.

NOTES ON HANDLING THE OPTICAL PICK-UP BLOCK OR BASE UNIT

The laser diode in the optical pick-up block may suffer electrostatic break-down because of the potential difference generated by the charged electrostatic load, etc. on clothing and the human body.
During repair, pay attention to electrostatic break-down and also use the procedure in the printed matter which is included in the repair parts.
The flexible board is easily damaged and should be handled with care.

NOTES ON LASER DIODE EMISSION CHECK

The laser beam on this model is concentrated so as to be focused on the disc reflective surface by the objective lens in the optical pick-up block. Therefore, when checking the laser diode emission, observe from more than 30 cm away from the objective lens.

UNLEADED SOLDER

Boards requiring use of unleaded solder are printed with the lead-free mark (LF) indicating the solder contains no lead.
(Caution: Some printed circuit boards may not come printed with the lead free mark due to their particular size)

: LEAD FREE MARK

Unleaded solder has the following characteristics.

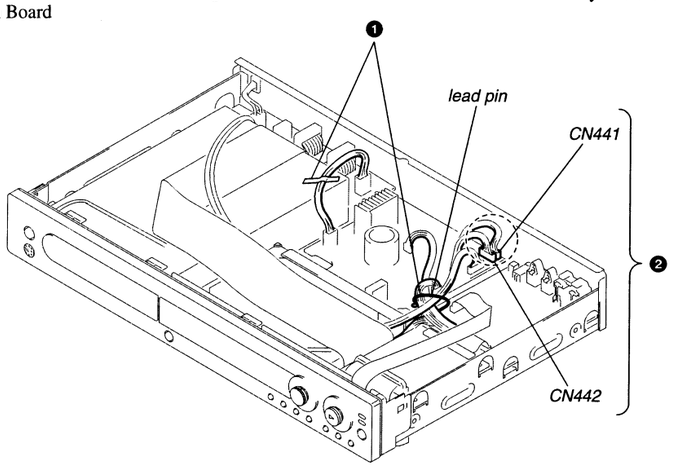
- Unleaded solder melts at a temperature about 40 °C higher than ordinary solder.
  Ordinary soldering irons can be used but the iron tip has to be applied to the solder joint for a slightly longer time.
  Soldering irons using a temperature regulator should be set to about 350 °C .
  Caution: The printed pattern (copper foil) may peel away if the heated tip is applied for too long, so be careful!
- Strong viscosity
  Unleaded solder is more viscous (sticky, less prone to flow) than ordinary solder so use caution not to let solder bridges occur such as on IC pins, etc.
- Usable with ordinary solder
  It is best to use only unleaded solder but unleaded solder may also be added to ordinary solder.

SAFETY-RELATED COMPONENT WARNING!!

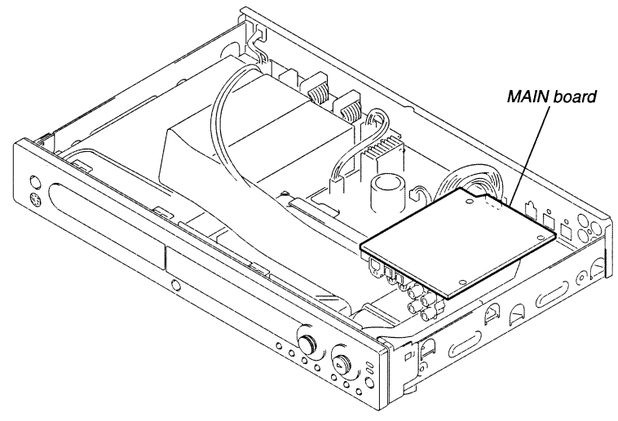
COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

CAUTION :

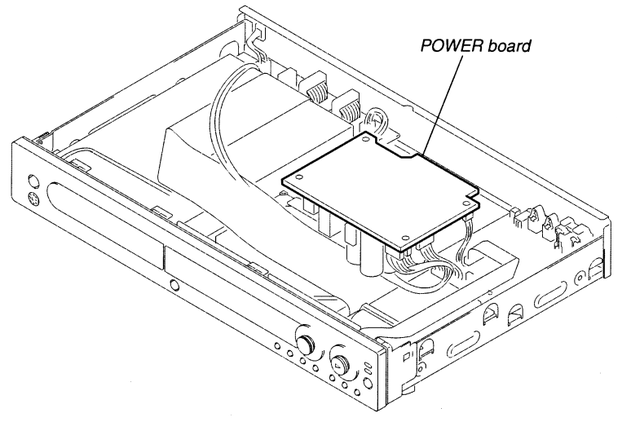
1. Fix the wires securely with lead pins or the like so that the wires must not be located near the primary side of the power supply.
2. The two connectors (CN441, CN442) having the same color and the same pin arrangement are located on the POWER board. The cables coming from the HDD drive or the cables coming from the CD-ROM drive can be connected freely to either connector of them.Service Position of the Main Board



Service Position of the MAIN Board



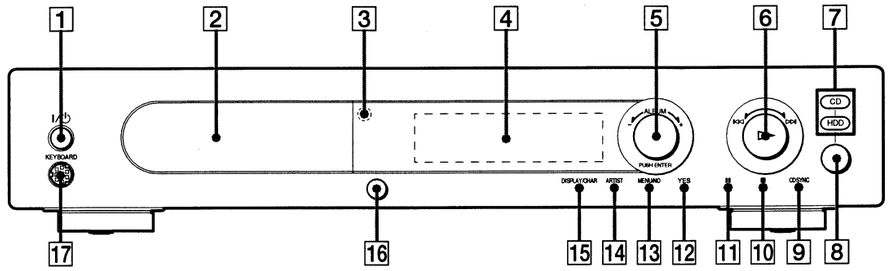
Service Position of the POWER Board



SECTION 2
GENERAL

This section is extracted from instruction manual.

Front Panel



ALPHABETICAL ORDER

A-C

ALBUM (+/–) dial [5] (11, 18, 23, 32)
ARTIST [14] (22)
CD cover [2] (8)
CD/HDD [8] (8, 11, 18, 23, 32)
CD/HDD indicator [7] (8, 11, 18, 23, 32)
CD SYNC [9] (12)

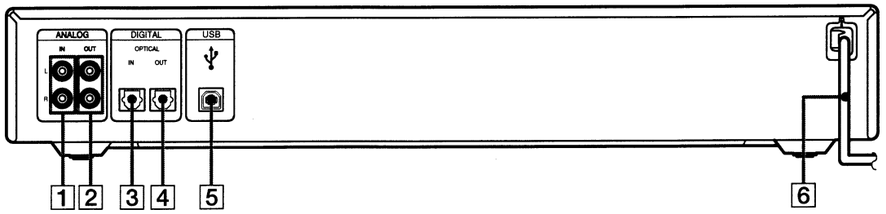
D-Z

DISPLAY/CHAR [15] (9, 19, 29)
Display window [4] (9, 17, 19)
KEYBOARD connector [17] (33)
MENU/NO [13] (11, 24, 32)
PLAY/NEXT/PREV (▷/⏮/⏭) dial [6] (8, 12, 18, 25)
Remote censor [3] (6)
YES [12] (11, 20, 24, 32)

BUTTON DESCRIPTIONS

I/⏻ (power) [1] (8, 11, 18)
⏏ [16] (8)
❚❚ [11] (9, 12, 18)
■ [10] (9, 12, 18, 23)

Rear Panel



ALPHABETICAL ORDER

A-O

ANALOG IN L/R jacks [1] (7)
ANALOG OUT L/R jacks [2] (7)
DIGITAL OPTICAL IN connector [3] (7)
DIGITAL OPTICAL OUT connector [4] (7)

P-Z

Power cord [6]
USB connector [5] (7)

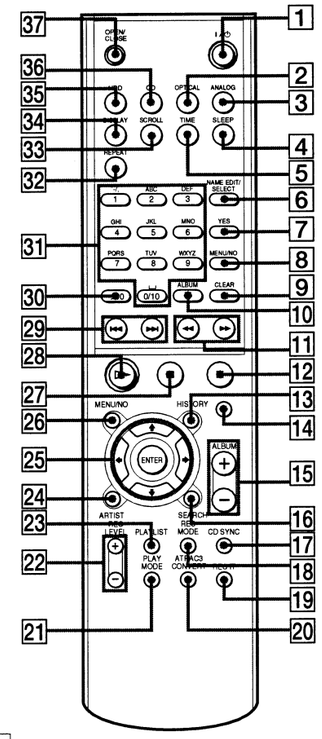
List of button locations and reference pages

How to use this page

Use this page to find the location of buttons and other parts of the system that are mentioned in the text.

Illustration number ↓
PLAY MODE [15] (13, 32, 45)
↑ Name of button/part ↑ Reference pages

Remote Control



ALPHABETICAL ORDER

A-M

ALBUM [10] (12, 18)
ALBUM +/– [15] (12, 18, 28)
ANALOG [3] (13, 17)
ARTIST [24] (22)
ATRAC3 CONVERT [20] (32)
CD [36] (8, 11)
CD SYNC [17] (12)
CLEAR [9] (10, 16, 28)
DISPLAY [34] (9, 19, 29)
ENTER/↑/↓/←/→ [25] (11, 21, 24, 32)
HDD [35] (18, 23, 32)
HISTORY [13] (23)
Letter/Numeric buttons [31] (9, 19, 28)
MENU/NO [8] (11, 24, 32)
MENU/NO [26] (11, 24, 32)

N-Z

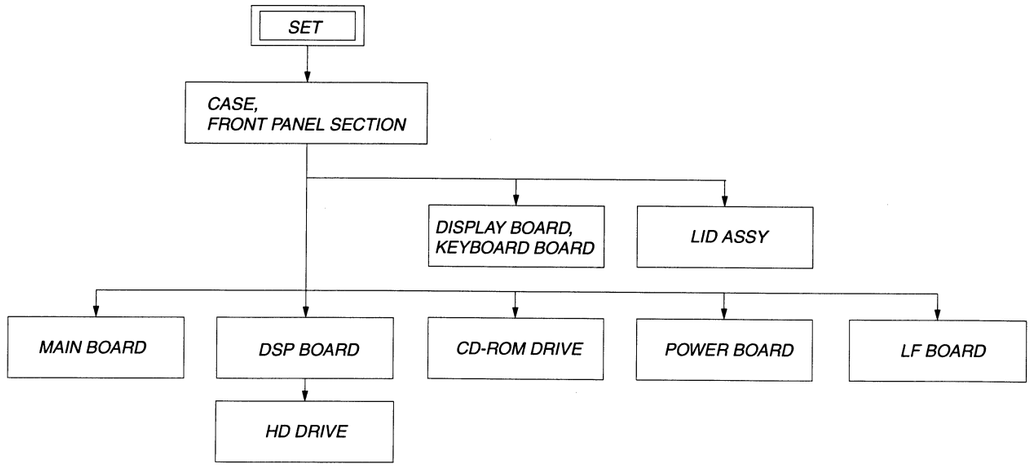
NAME EDIT/SELECT [6] (28)
OPEN/CLOSE ⏏ [37] (8)
OPTICAL [2] (13)
PLAYLIST [23] (20)
PLAY MODE [21] (8, 18)
REC IT [19] (14)
REC LEVEL +/– [22] (17)
REC MODE [18] (12)
REPEAT [32] (8, 18)
SCROLL [33] (10)
SEARCH [16] (21)
SLEEP [4] (32)
TIME [5] (10, 13, 19)
YES [7] (11, 20, 24, 32)

BUTTON DESCRIPTIONS

I/⏻ (power) [1] (8, 11, 18)
⏮/⏭ [29] (9, 18, 25)
◀◀/▶▶ [11] (9, 18)
▷ [28] (8, 12, 18)
❚❚ [27] (9, 12, 18)
■ [12] (9, 12, 18, 23)
● [14] (13)
>10 [30] (9, 19)

SECTION 3
DISASSEMBLY

Note : Disassemb le the unit in the or der as sho wn below.



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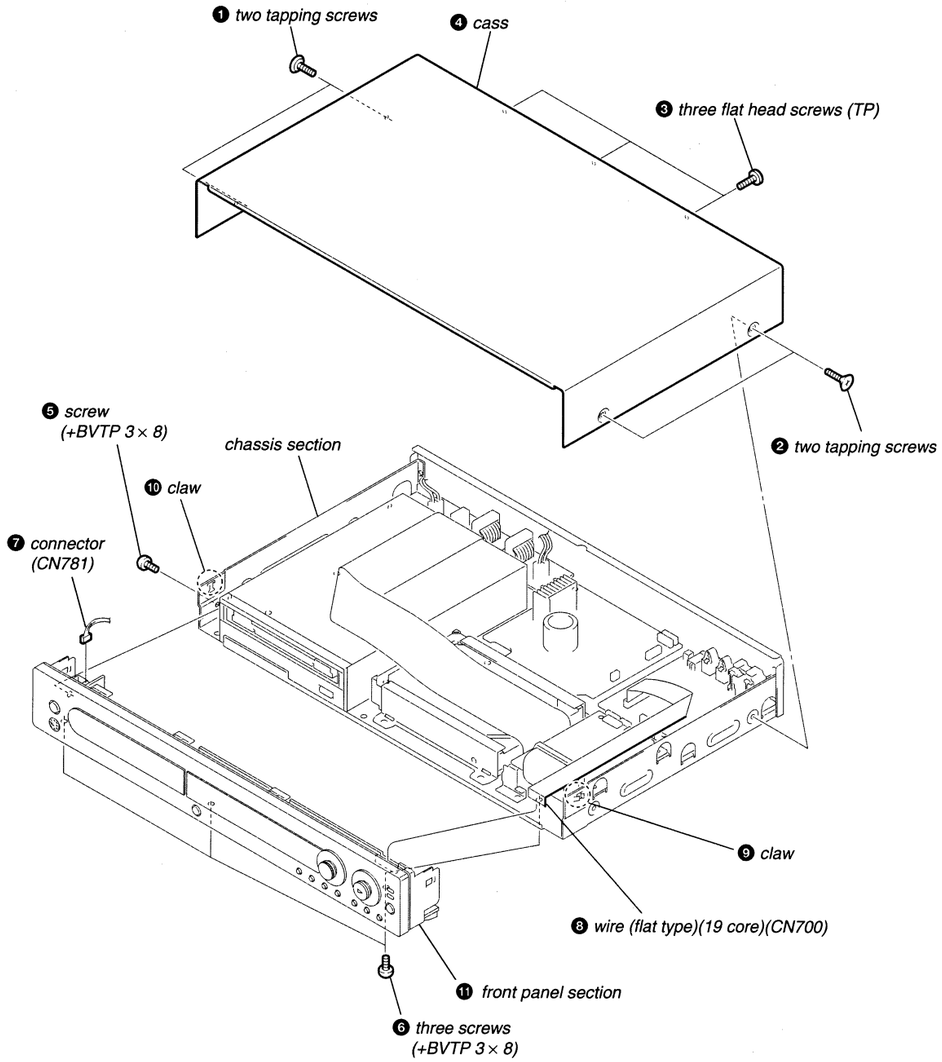
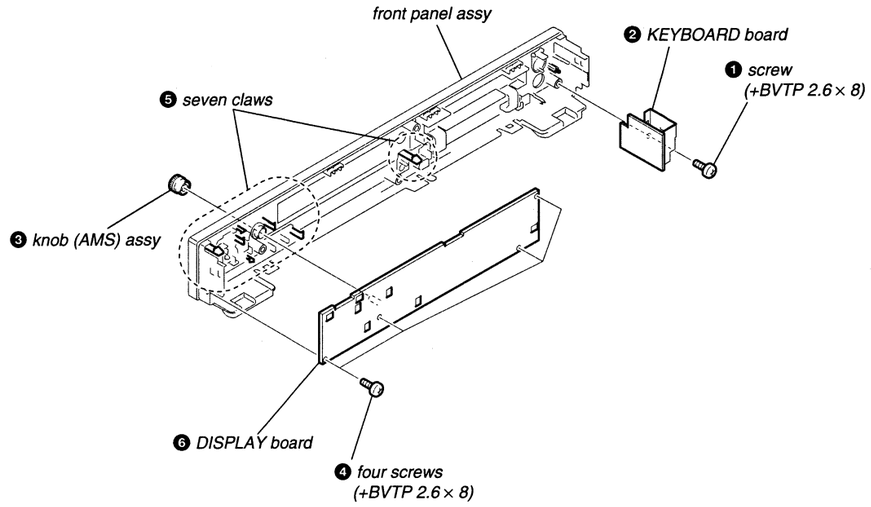
Note : Follow the disassemb ly procedure in the n umerical or der given.

3-1. CASE, FRONT PANEL SECTION



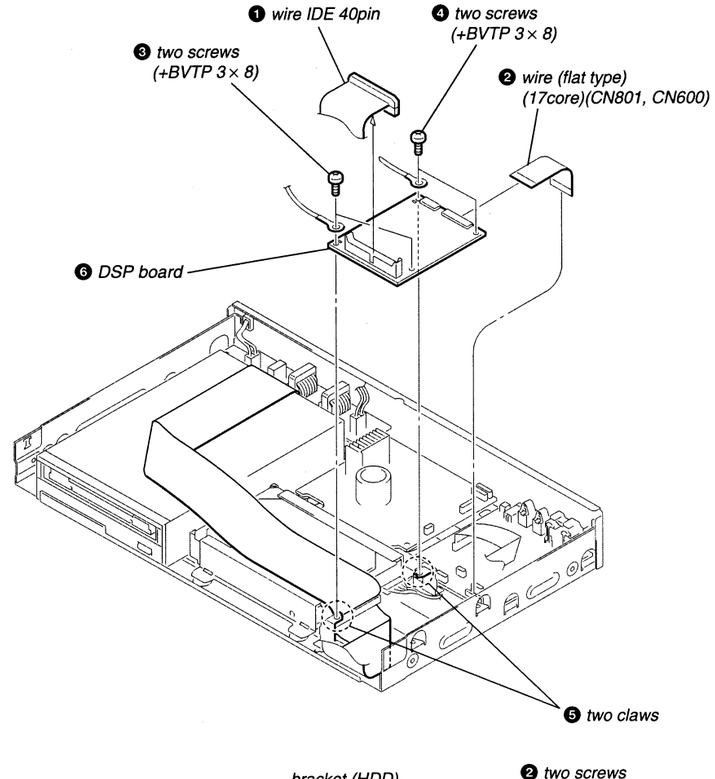
3-2. DISPLAY BOARD, KEYBOARD BOARD



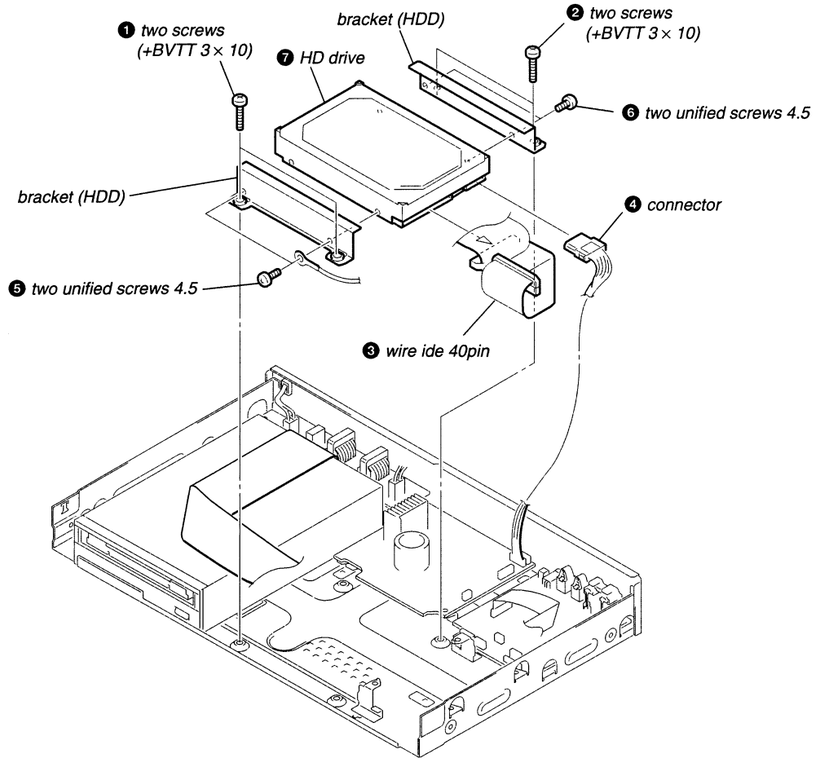
3-3. MAIN BOARD

❼ connector (CN602)
❽ connector (CN380)
❻ connector (CN340)
❾ wire (flat type) (19 core)(CN601)
❺ connector (CN360)
❸ PC board holder
⓬ two screws (+BVTP 3× 8)
⓭ MAIN board
❷ screw is loosened.
❹ wire (flat type) (17 core)(CN600)
⓫ screw (+BVTT 3× 6)
❿ three screws (+BVTP 3× 8)
❶ two screws is loosened.

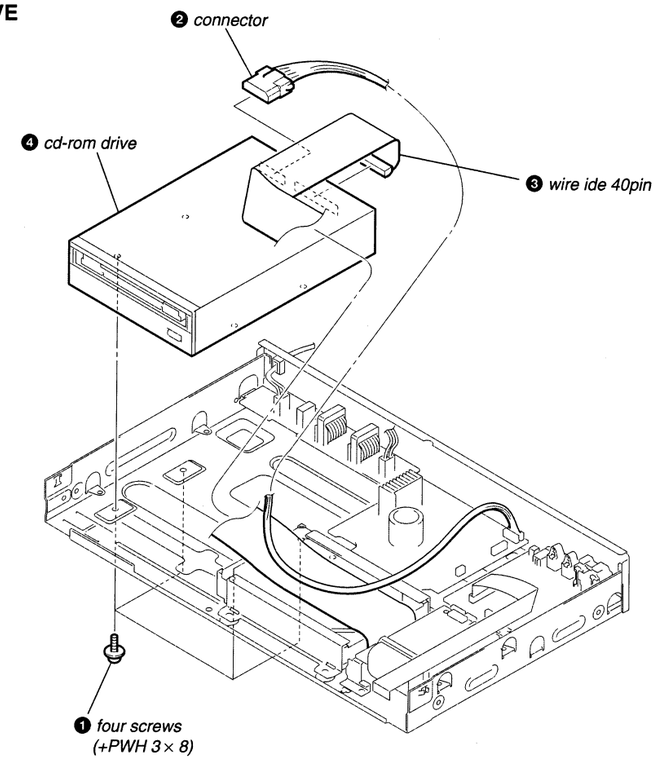
3-4. DSP BOARD



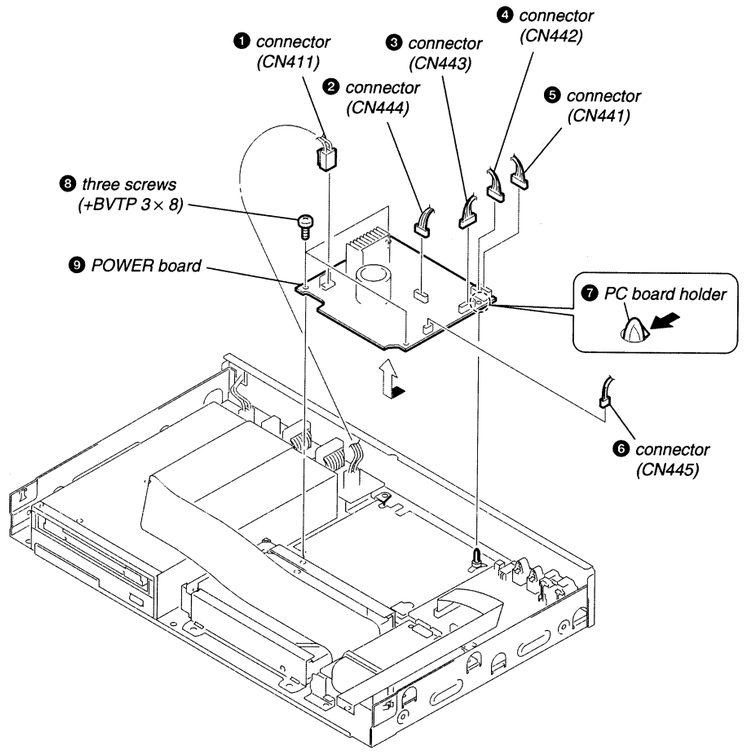
3-5. HD DRIVE



3-6. CD-ROM DRIVE



3-7. POWER BOARD



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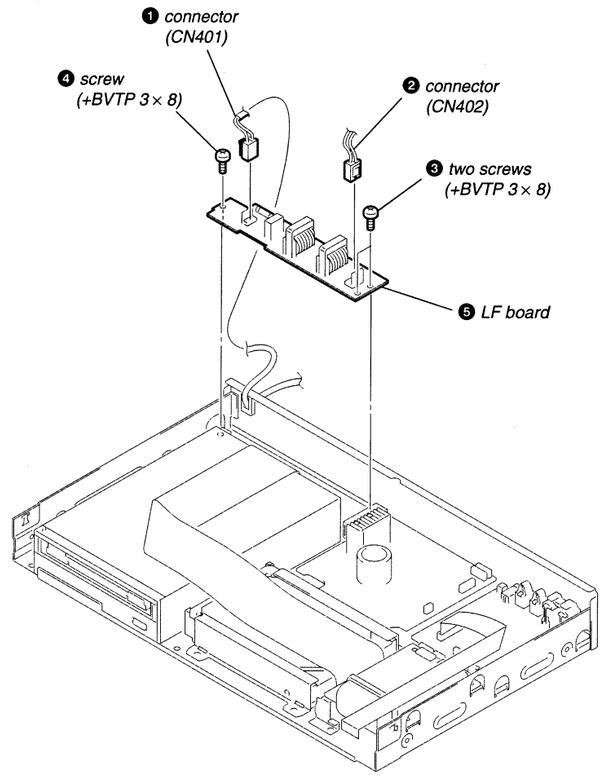
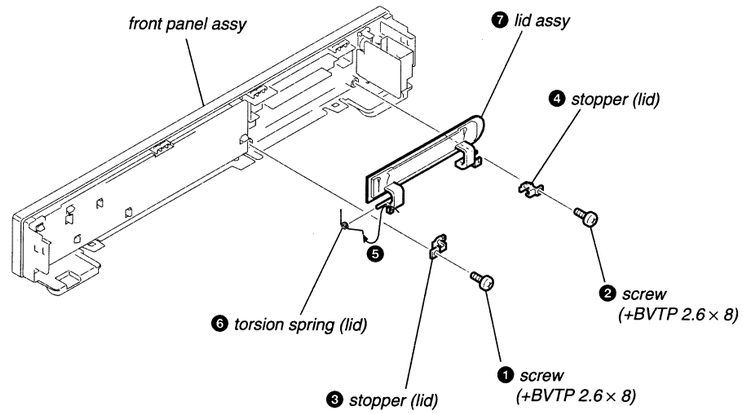
3-8. LF BOARD



3-9. LID ASSY



SECTION 4
TEST MODE

This set provides various modes for the service.
Enter the test mode through the procedure given below, and select the desired mode.

Procedure:
1. Press the ■ and YES buttons at the same time.
2. Press the ALBUM dial and ■ button to display "<To Normal> 1".
3. At this time, turn the ALBUM dial to select all modes. For the contents of mode, see the following table.
4. To perform the test, press the ALBUM dial. Press the MENU/NO button if not to perform.
5. To exit from the test mode, turn the ALBUM dial to display "<To Normal> 1", then press the ALBUM dial.

Contents of test mode

No.	Display	Function
1	<To Nomal> 1	Exit from test mode
2	<History> 2	History display
3	<FLD Test> 3	FL display & LED test
4	<Key Jog> 4	Key/Jog input test
5	<HDD Test> 5	HDD all sorts test
6	<CD Test> 6	(Not for Service)
7	<SDRAM Test> 7	SDRAM test
8	<HDD Aging> 8	(Not for Service)
9	<UpDate> 9	Firmware update
10	<EEPROM> 10	Initialization of EEPROM

HDD Test Menu

Display	Function
HDD Format?	Formatting the HDD
HDD Read Test?	(Not for Service)
HDD Write test?	(Not for Service)
HDD W/R Test?	(Not for Service)
HDD Smart?	Display of S.M.A.R.T. status
HDD Scaning	(Not for Service)

History Display
Procedure:
1. Enter the test mode, then turn the ALBUM dial to display "<History> 2", and press the ALBUM dial.
2. The <MCU> version is displayed.
3. Press the ALBUM dial to display <DSP> version.
4. Press the ALBUM dial to display the running time.
5. To exit from the mode, press the ALBUM dial.

FL Display Test/LED test
Procedure:
1. Enter the test mode, then turn the ALBUM dial to display "<FLD test> 3", and press the ALBUM dial.
2. All segments of fluorescent display tube turn on fully, and CD LED and HDD LED turn on.
3. Pressing the ALBUM dial causes all segments and LEDS to turn off.
4. Pressing the ALBUM dial causes allmost half segments to turn on.
5. Press the ALBUM dial and the pattern of segments changes to another.
6. To exit from the mode, press the ALBUM dial.

Key/Jog Input Test
Procedure:
1. Enter the test mode, then turn the ALBUM dial to display "<Key, Jog> 4", and press the ALBUM dial. The message "Remain No. 14" is displayed.
2. Clockwise rotation of the ALBUM dial moves the peak level meter up, or counterclockwise rotation of the ALBUM dial moves peak level meter down.
3. Press the buttons in order and the number of Key decreases while turning off segments of fluorescent display tube. And when all buttons were pressed, "OK" will be displayed.
4. To exit from the mode, press the ALBUM dial.

SDRAM Test
① RAM Read Test
Note: Not for Service

② RAM Write Test
Note: Not for Service

③ RAM W/R Test
Procedure:
1. Enter the SDRAM test mode, then rotate the ALBUM dial to display "RAM W/R Test?", and press the ALBUM dial.
2. The message "RAM W/R Now" is displayed.
3. When the test is complete, "Finish!" or "NG" is displayed.
4. To exit from this mode, press the MENU/NO button twice.

UpDate of firmware
Procedure:
1. Insert the CD for Update. Wait until TOC reading is finished.
2. Enter the test mode, then rotate the ALBUM dial to display "<UpDate> 9", and press the ALBUM dial.
3. The message "UpDate OK?" is displayed, and press the ALBUM dial to perform the update.
4. Update is performed and "OK is displayed.
5. To exit from this mode, press the ALBUM dial.

EEPROM Initialzation
Procedure:
1. Enter the test mode, then rotate the ALBUM dial to display "<EEPROM> 10", and press the ALBUM dial.
2. The message "EEPROM Clear?" is displayed, and press the ALBUM dial to perform the initialization.
3. Initialization is performed and "OK is displayed.
4. To exit from this mode, press the ALBUM dial.

HDD SECTION

Set the HDD test mode when performing confirmation (refer to page 13).
After completing confirmation, release the HDD test mode.

Note: If any of the following test modes is executed, data is written in the HDD.
Never execute any of these test modes on the customer's HDD, because customer's data is erased during test mode.

HDD Format
HDD Write Test
HDD W/R Test
HDD Aging

Note:
Checking the HDD.
(a) Perform the SMART test.
(b) If "NG" appears, the HDD may be damaged in the near future.
Replacement of the HDD is recommended. When "OK" appears, the HDD is normal.

Note (When HDD is replaced) :
When HDD is replaced, perform the following steps.
(a) When HDD is replaced, leave the set with the power on for approximately thirty minutes . (Warming up the HDD)
(b) Enter the HDD test mode and format the HDD.
(c) Turn off the power once and back on again.
(d) Record the music in the HDD using CD-HDD Synchro-Recording function for testing the HDD. (about thirty minutes)
(e) Confirm that music is correctly recorded. After it is confirmed, erase all recordings on the HDD.

1. FORMAT

* This mode performs logical formatting HDD.
If formatting is performed, all data on the HDD is erased.
* When HDD is replaced, be sure to format the new HDD. If the new HDD is not formatted, the error message "Format Error " will be displayed.
* The 999 albums and 10 play lists are created at the same time of logical formatting on the HDD.

Procedure:
(1) Enter the HDD test mode, then rotate the [ALBUM] dial to display "HDD Format?", and press the [ALBUM] dial to display "HDD Format OK?".
(2) The message "HDD Format Now" is displayed and it takes about one minute.
(3) When format is complete, "Finish!" is displayed.
(4) To exit from this mode, press the [MENU/NO] button twice.

2. SMART TEST

* This mode displayed status of S.M.A.R.T. functions of the HDD.
* If "NG" appears in this mode, the HDD may be damaged in the near future. Replacement of the HDD is recommended.

Procedure:
(1) Enter the HDD test mode, then rotate the [ALBUM] dial to display "HDD Smart?", and press the [ALBUM] dial to display "Smart Testing".
(2) When the test is complete, "OK" or "NG" is displayed.
(3) To exit from this mode, press the [MENU/NO] button.

SECTION 5
ELECTRICAL ADJUSTMENTS

CD SECTION

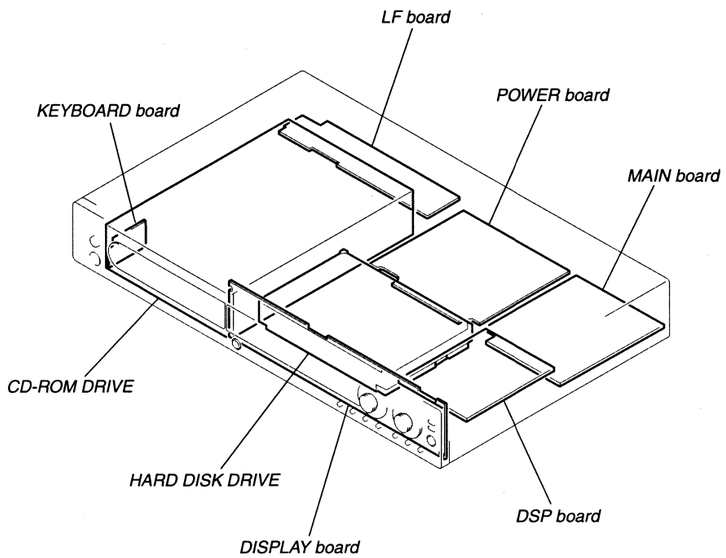
Note:
1. CD Block is basically designed to operate without adjustment.
Therefore, check the function of CD playback.
2. Use PTD-001 disc (3-702-529-01) unless otherwise indicated.

CD Playback Check

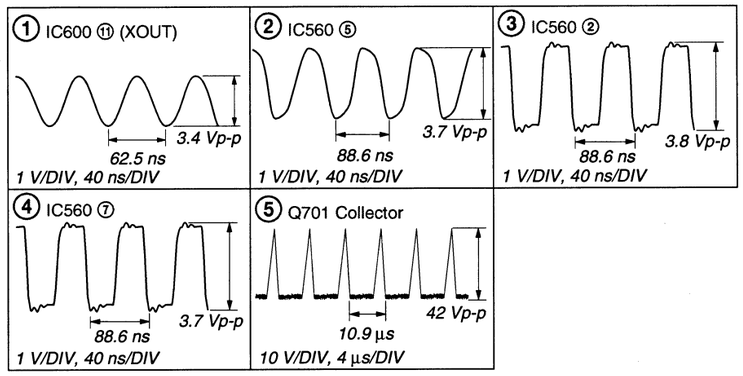
Procedure:
1. Turn on the power.
2. Set the test disc (PTD-001).
3. Playback the track 0.7mm of Black Band/Red Band.
4. Confirm that playback is normal without sound jump.

SECTION 6
DIAGRAMS

• Circuit Boards Location



• Waveforms



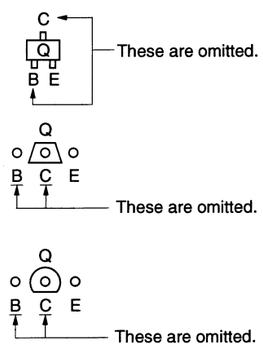
Note on Printed Wiring Board:

- ○——— : parts extracted from the component side.
- ——— : parts extracted from the conductor side.
- ○ : Through hole.
- ▒▒▒ : Pattern from the side which enables seeing.

(The other layers' patterns are not indicated.)

Caution:	
Pattern face side: (Side B)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Side A)	Parts on the parts face side seen from the parts face are indicated.

- Indication of transistor.



Note on Schematic Diagram:

- All capacitors are in µF unless otherwise noted. p : pF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4 W or less unless otherwise specified.
- △ : internal component.
- ▭ : panel designation.

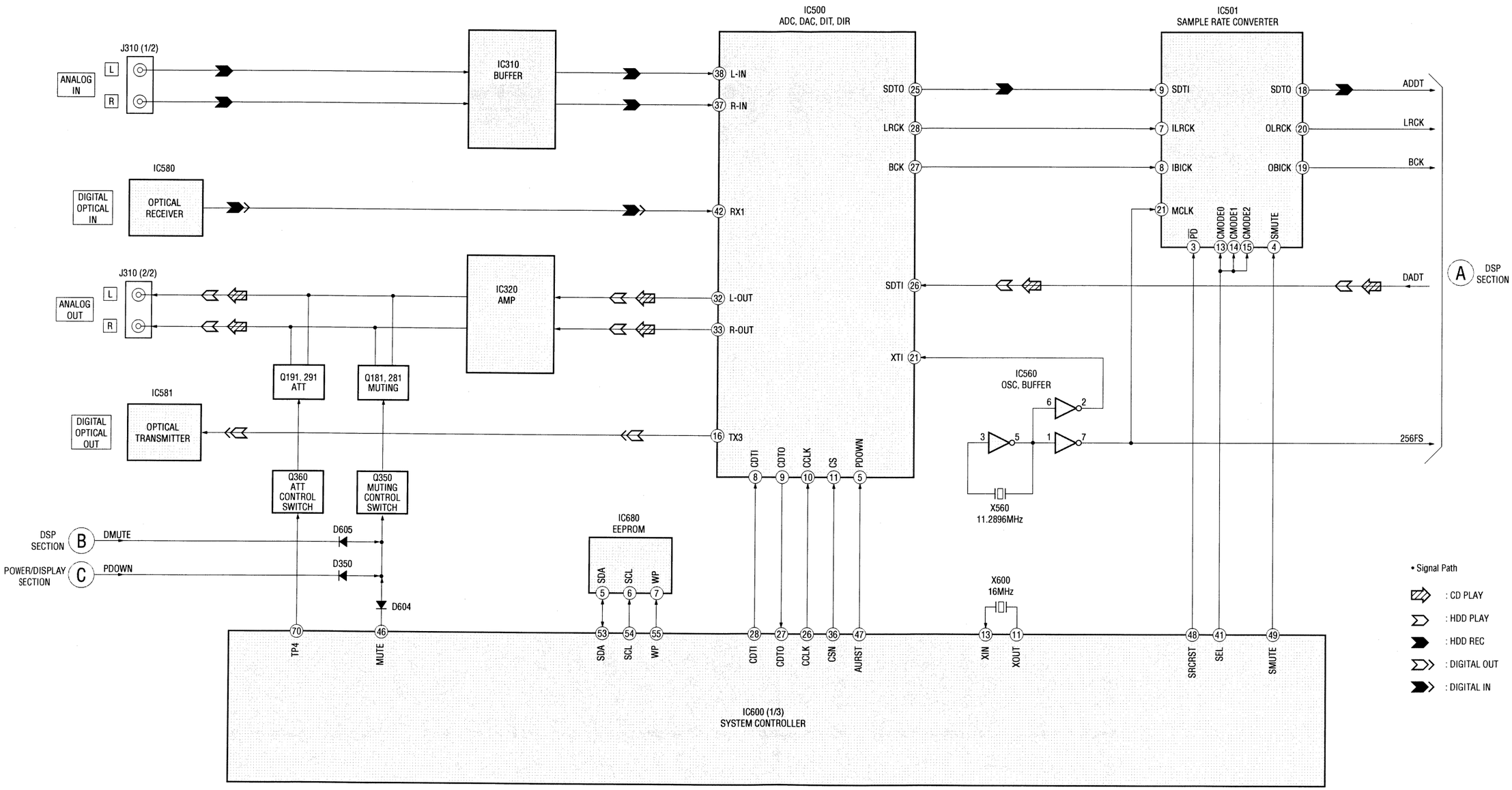
Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

- ▬▬ : B+ Line.
- ▬ ▬ ▬ : B– Line.
- Voltages are taken with a VOM (Input impedance 10 MΩ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
  - : HDD PLAY
  - : HDD REC
  - : CD PLAY
  - : DIGITAL IN
  - : DIGITAL OUT

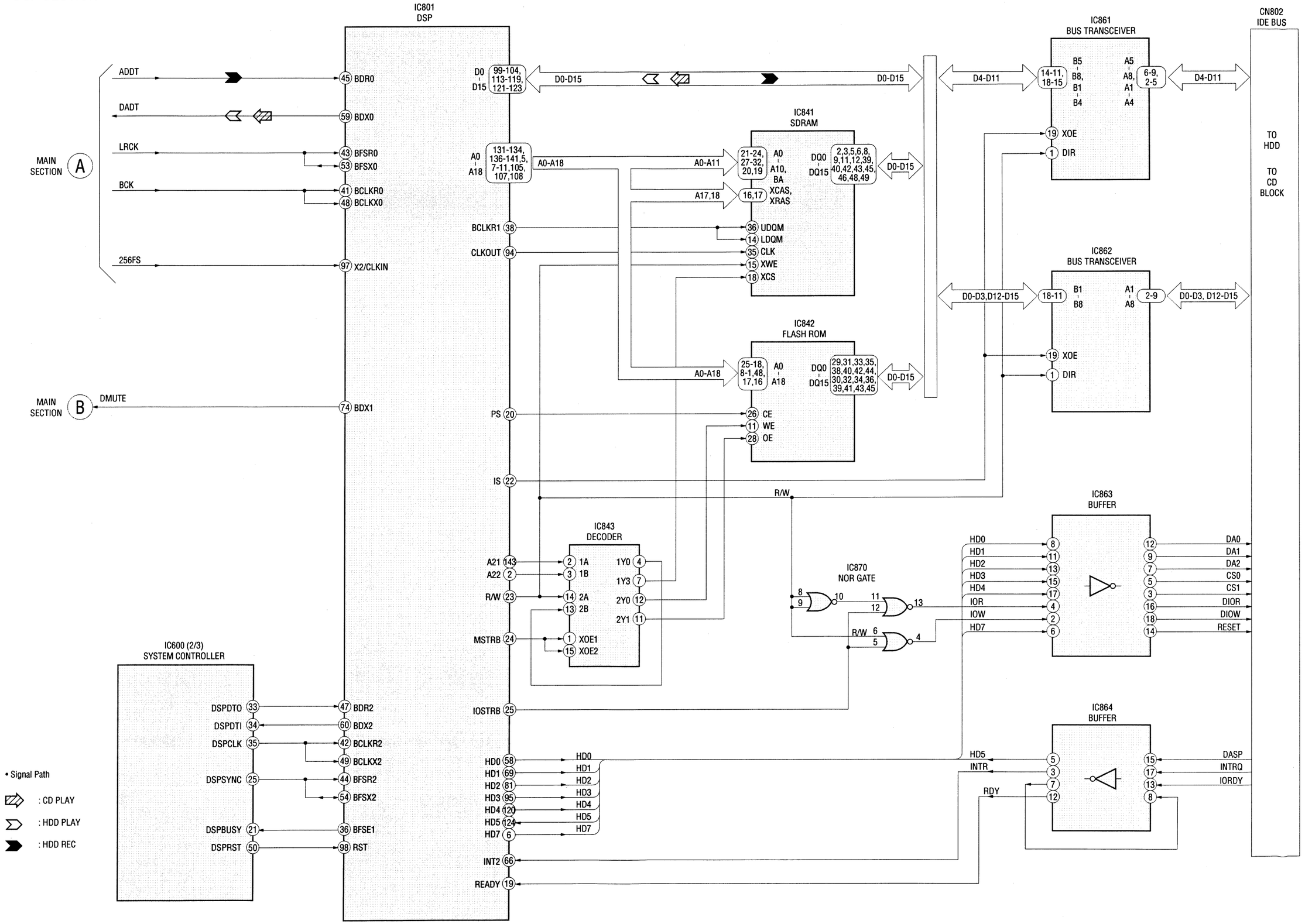
17

HAR-LH500

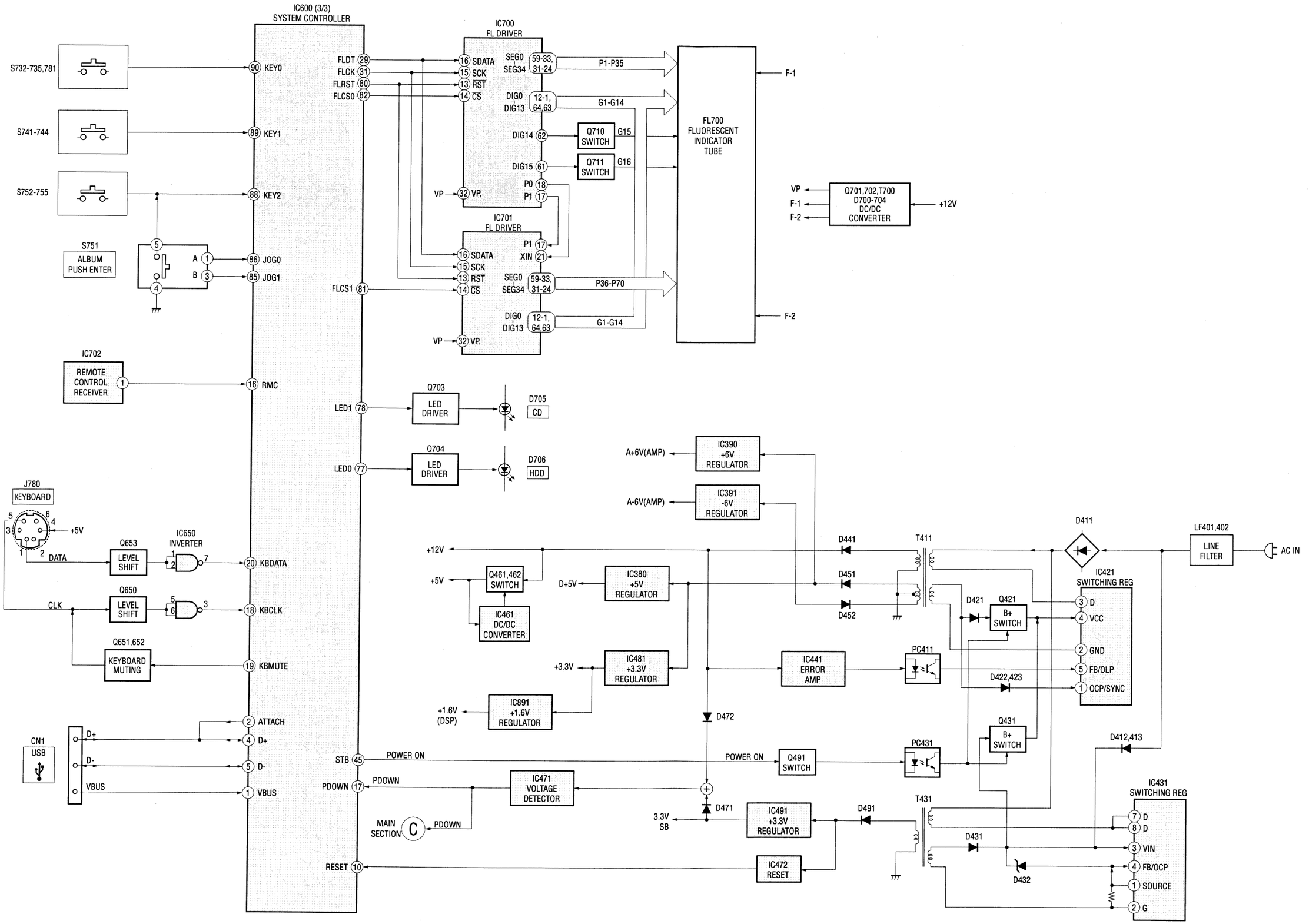
6-1. BLOCK DIAGRAM – MAIN SECTION –



– DSP SECTION –

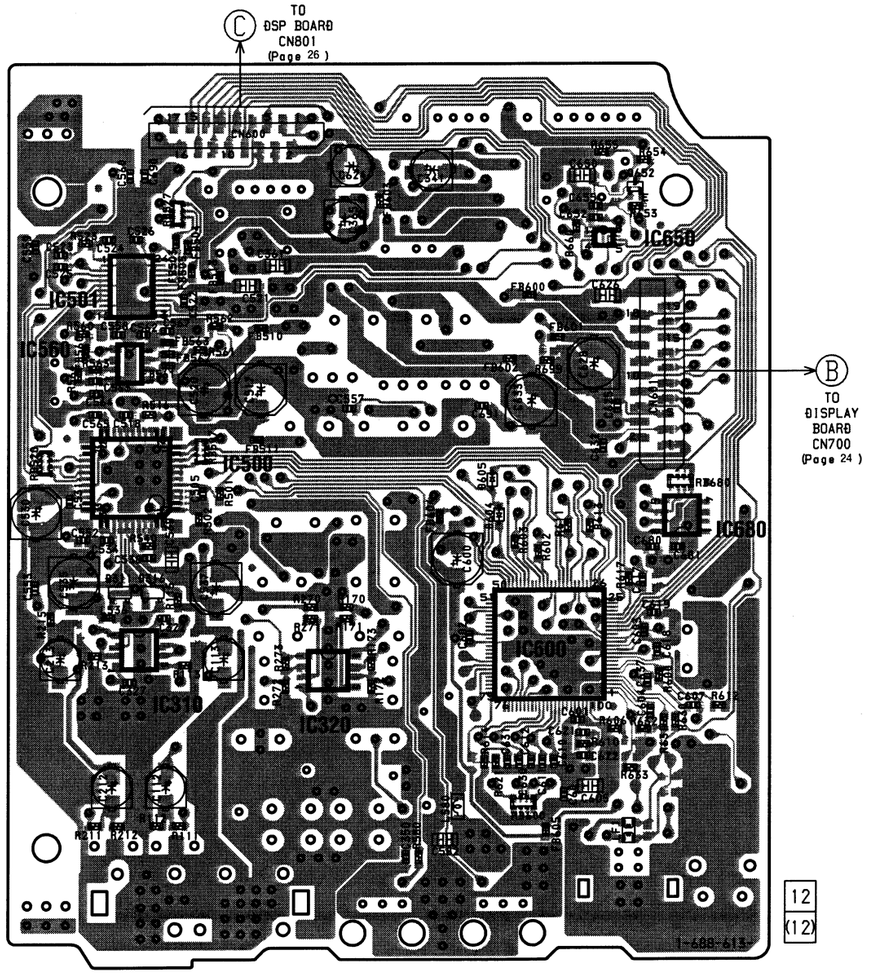

IC801
DSP
ADDT
DADT
LRCK
BCK
256FS
MAIN SECTION A
MAIN SECTION B
DMUTE
45 BDR0
59 BDX0
43 BFSR0
53 BFSX0
41 BCLKR0
48 BCLKX0
97 X2/CLKIN
74 BDX1
D0 D15
99-104, 113-119, 121-123
D0-D15
IC841
SDRAM
A0 A18
131-134, 136-141,5, 7-11,105, 107,108
A0-A18
21-24, 27-32, 20,19
A0 A10, BA
A0-A11
16,17
XCAS, XRAS
A17,18
DQ0 DQ15
2,3,5,6,8, 9,11,12,39, 40,42,43,45, 46,48,49
BCLKR1 38
CLKOUT 94
36 UDQM
14 LDQM
35 CLK
15 XWE
18 XCS
IC842
FLASH ROM
25-18, 8-1,48, 17,16
A0 A18
29,31,33,35, 38,40,42,44, 30,32,34,36, 39,41,43,45
PS 20
26 CE
11 WE
28 OE
IS 22
R/W
IC843
DECODER
A21 143
A22 2
R/W 23
MSTRB 24
2 1A
3 1B
14 2A
13 2B
1 XOE1
15 XOE2
1Y0 4
1Y3 7
2Y0 12
2Y1 11
IC870
NOR GATE
IOSTRB 25
HD0 58
HD1 69
HD2 81
HD3 95
HD4 120
HD5 124
HD7 6
INT2 66
READY 19
IC600 (2/3)
SYSTEM CONTROLLER
DSPDTO 33
DSPDTI 34
DSPCLK 35
DSPSYNC 25
DSPBUSY 21
DSPRST 50
47 BDR2
60 BDX2
42 BCLKR2
49 BCLKX2
44 BFSR2
54 BFSX2
36 BFSE1
98 RST
IC861
BUS TRANSCEIVER
D4-D11
14-11, 18-15
B5 B8, B1 B4
A5 A8, A1 A4
6-9, 2-5
19 XOE
1 DIR
IC862
BUS TRANSCEIVER
D0-D3,D12-D15
18-11
B1 B8
A1 A8
2-9
D0-D3, D12-D15
CN802
IDE BUS
TO HDD
TO CD BLOCK
IC863
BUFFER
HD0
HD1
HD2
HD3
HD4
IOR
IOW
HD7
DA0
DA1
DA2
CS0
CS1
DIOR
DIOW
RESET
IC864
BUFFER
HD5
INTR
RDY
DASP
INTRQ
IORDY
• Signal Path
: CD PLAY
: HDD PLAY
: HDD REC

– POWER/DISPLAY SECTION –

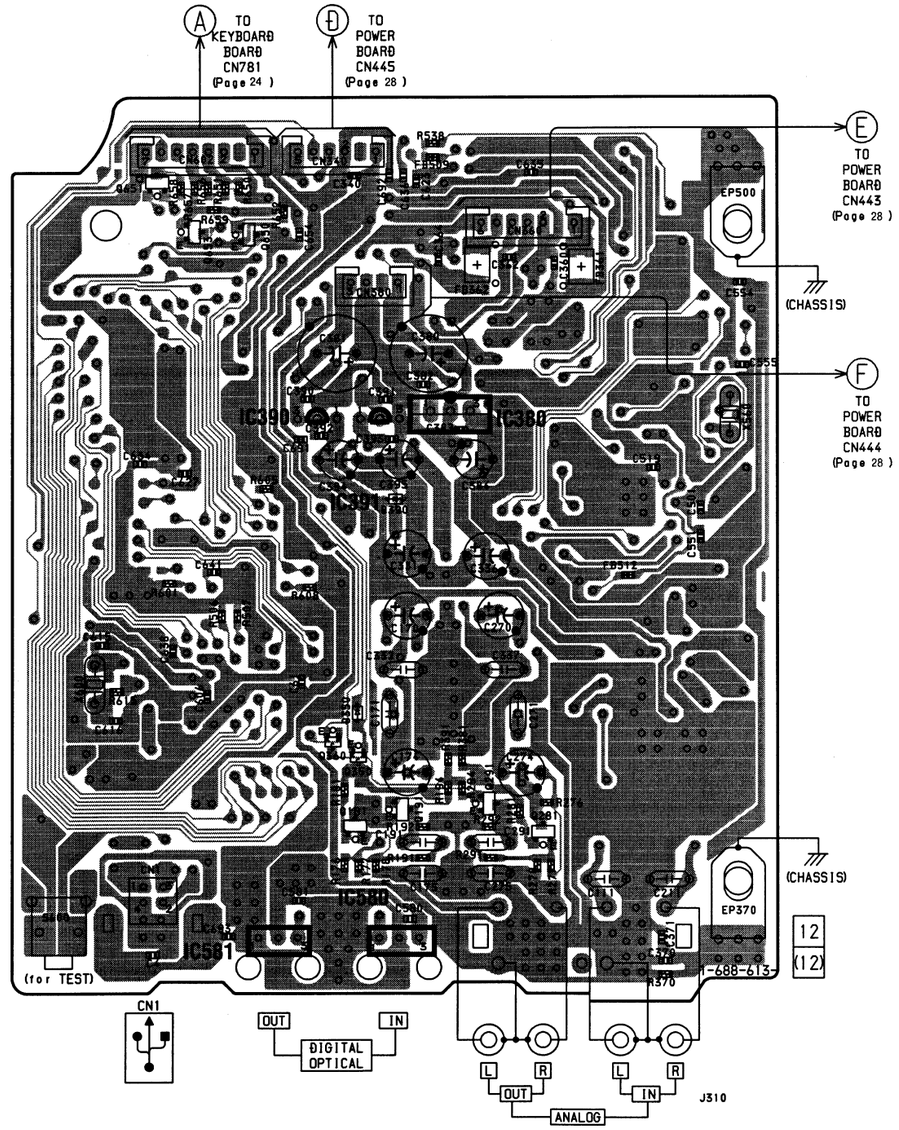


6-2. PRINTED WIRING BOARD – MAIN SECTION – • See page 17 for Circuit Boards Location. • : Uses unleaded solder.

【MAIN BOARD】(SIDE A)



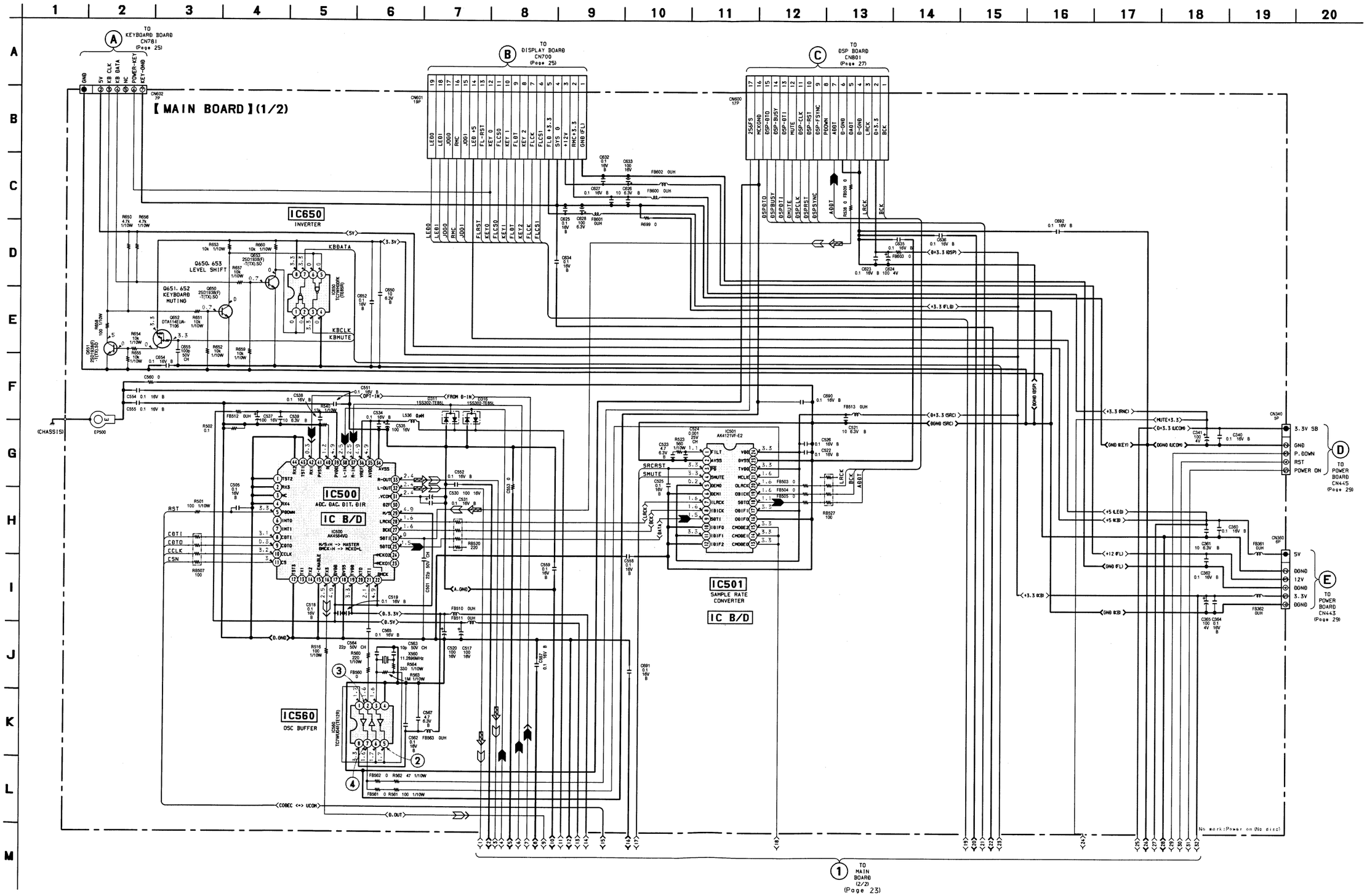
【MAIN BOARD】(SIDE B)



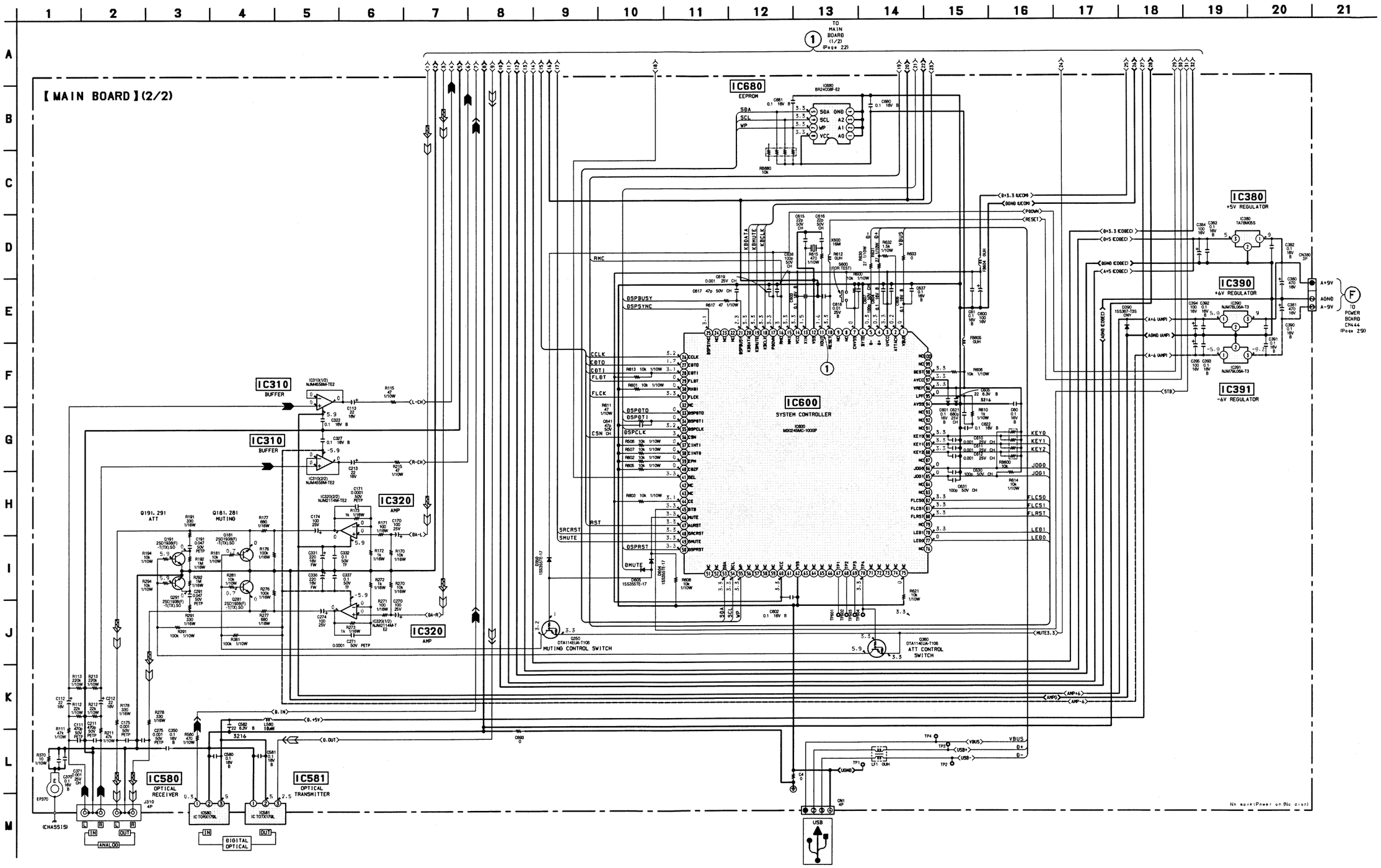
• **Semiconductor Location**

Ref. No.	Location
D311	C-1
D316	C-1
D350	C-5
D390	B-5
D604	C-2
D605	C-2
IC310	C-1
IC320	C-2
IC380	B-6
IC390	B-5
IC391	B-5
IC500	B-2
IC501	B-1
IC560	B-1
IC580	D-5
IC581	D-5
IC600	C-3
IC650	B-3
IC680	C-3
Q181	C-5
Q191	C-5
Q281	C-6
Q291	C-6
Q350	C-5
Q360	C-5
Q650	B-5
Q651	A-4
Q652	A-3
Q653	B-5

6-3. SCHEMATIC DIAGRAM – MAIN (1/2) SECTION – • See page 30 for IC Block Diagram. • See page 17 for Waveform.

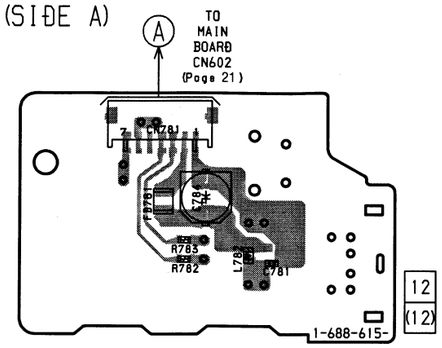


6-4. SCHEMATIC DIAGRAM – MAIN (2/2) SECTION – • See page 17 for Waveform.

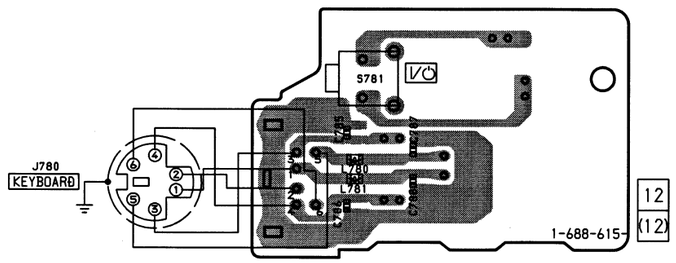


6-5. PRINTED WIRING BOARD – DISPLAY SECTION – • See page 17 for Circuit Boards Location. • 4F : Uses unleaded solder.

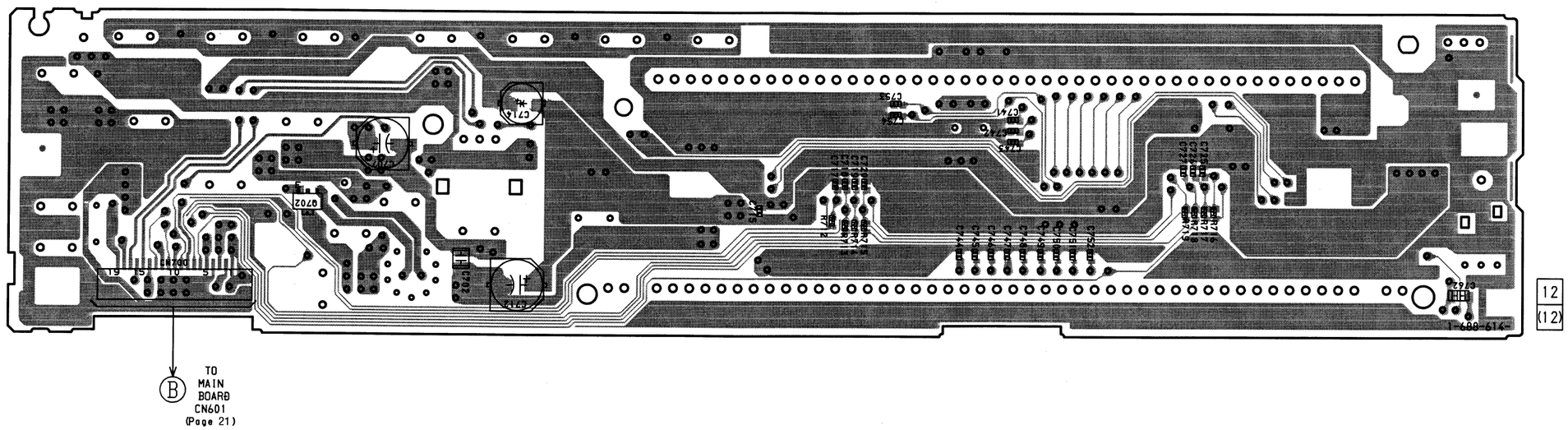
【KEYBOARD BOARD】(SIDE A)



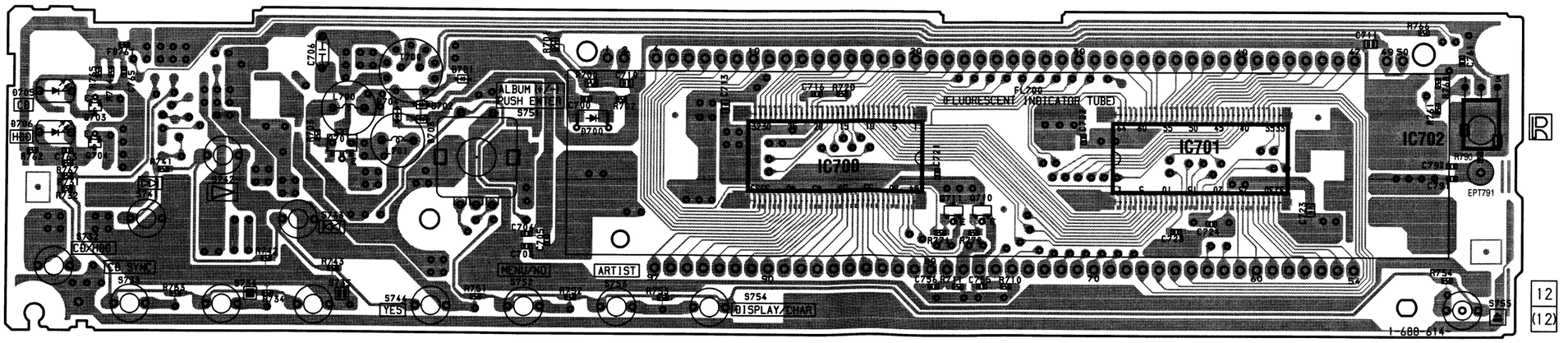
【KEYBOARD BOARD】(SIDE B)



【DISPLAY BOARD】(SIDE A)



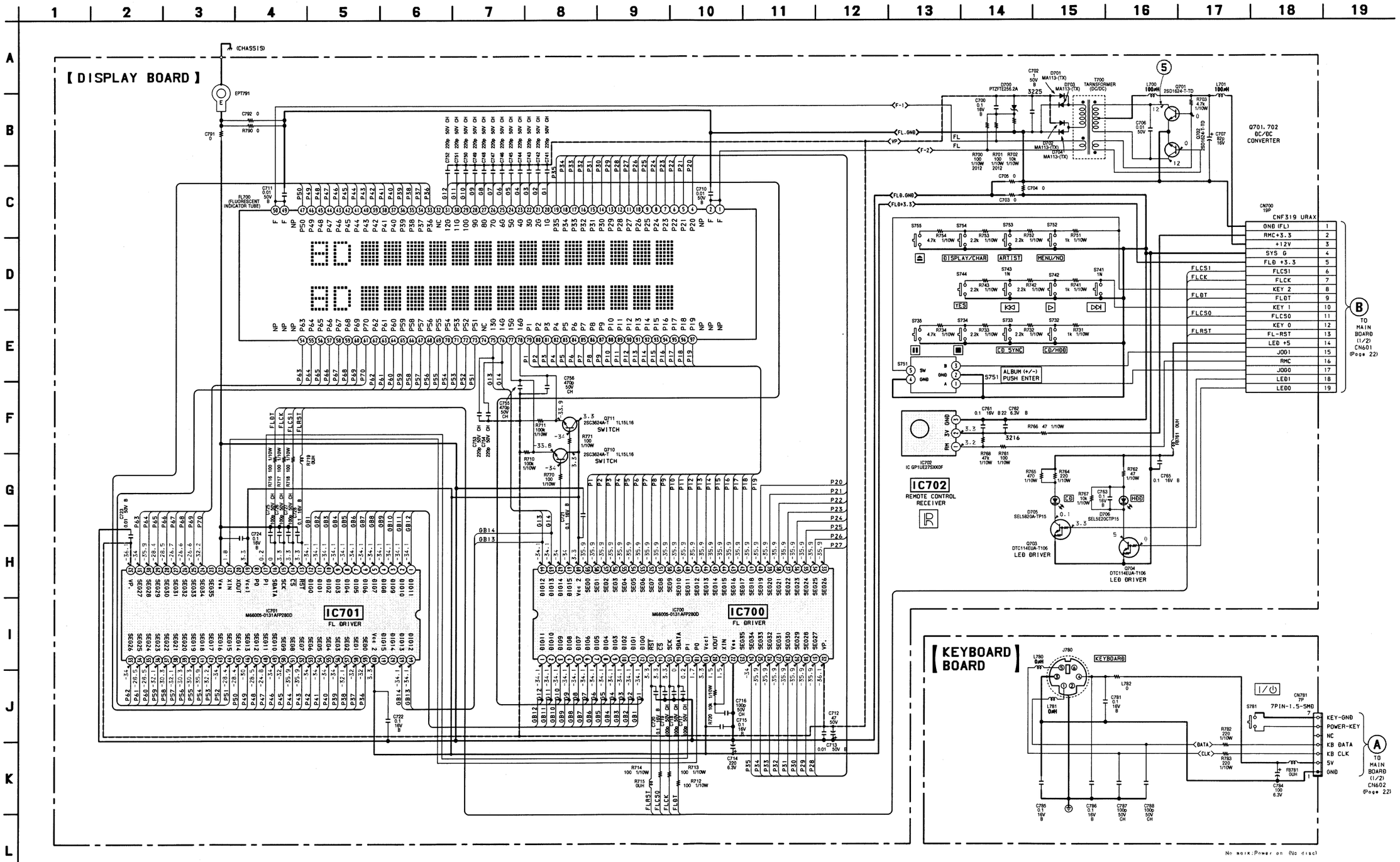
【DISPLAY BOARD】(SIDE B)



• **Semiconductor Location**

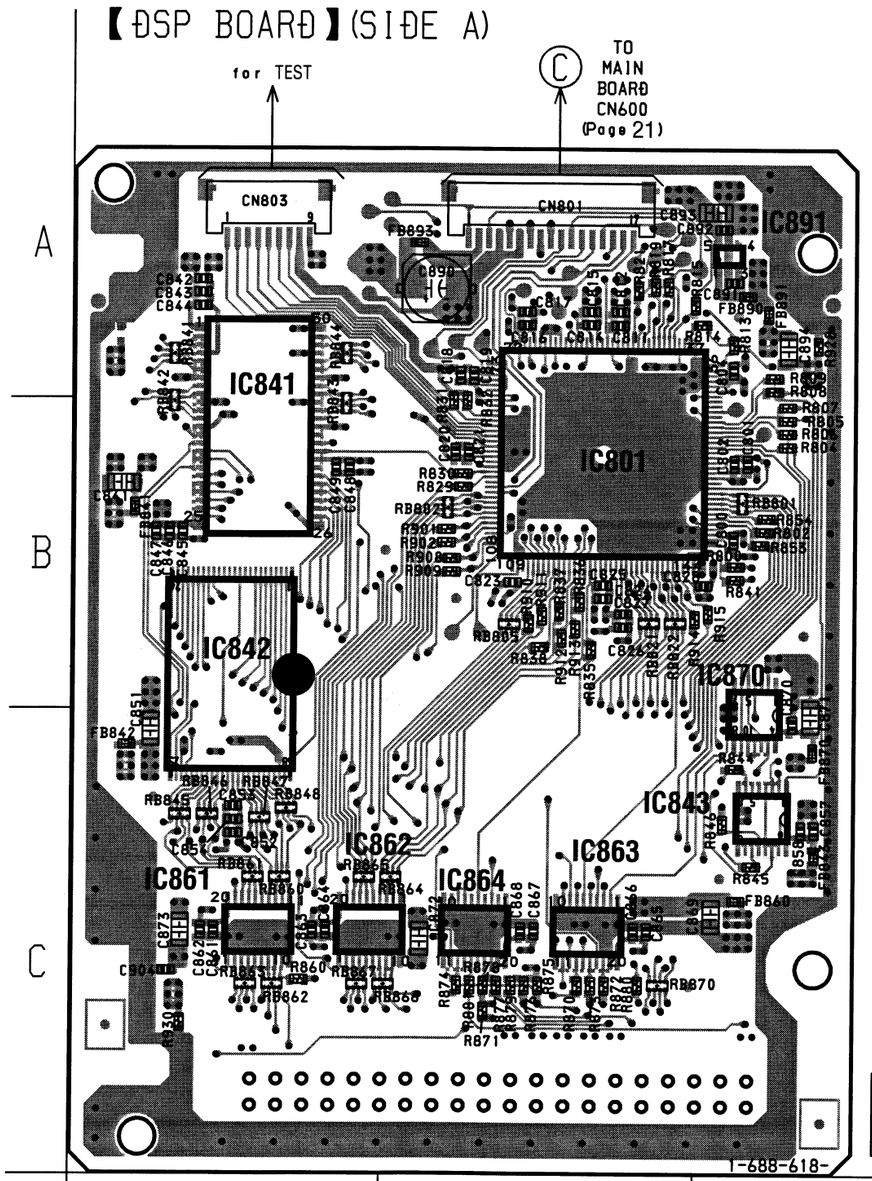
Ref. No.	Location
D700	E-4
D701	E-3
D702	E-3
D703	E-3
D704	E-3
D705	E-1
D706	E-1
IC700	F-5
IC701	F-7
IC702	F-8
Q701	F-2
Q702	C-2
Q703	E-1
Q704	F-1
Q710	F-6
Q711	F-5

6-6. SCHEMATIC DIAGRAM – DISPLAY SECTION – • See page 17 for Waveform.

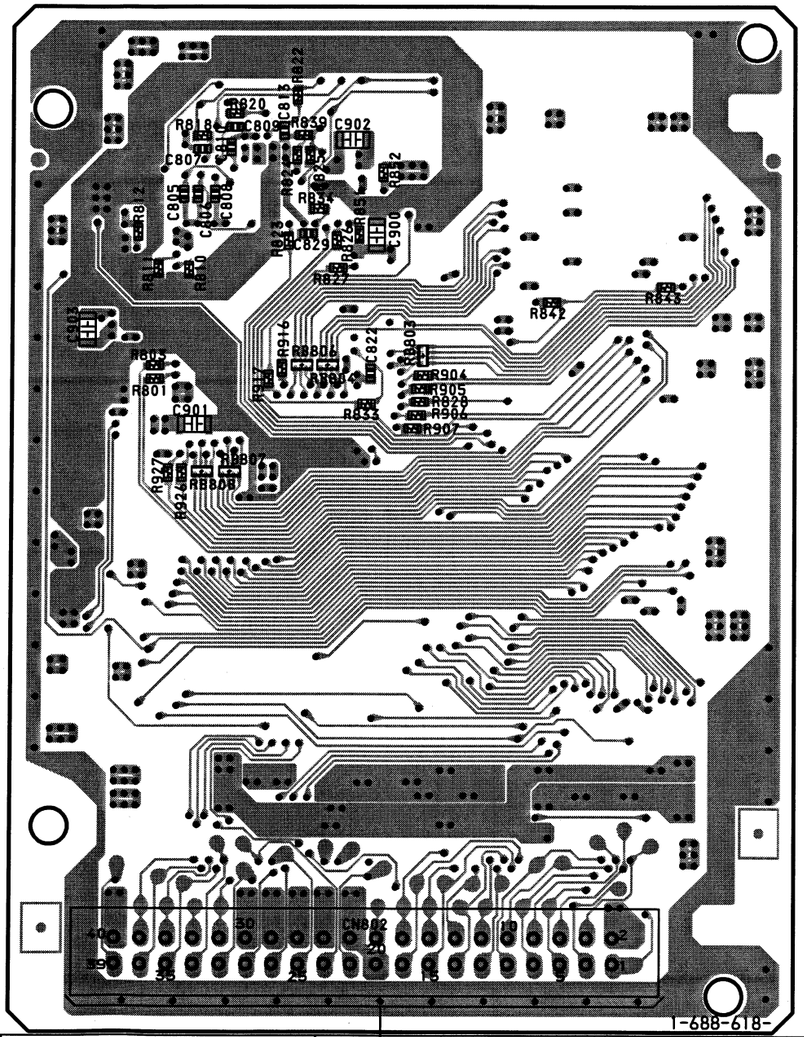


6-7. PRINTED WIRING BOARD – DSP SECTION – • See page 17 for Circuit Boards Location. • 4F : Uses unleaded solder.

【DSP BOARD】(SIDE A)



【DSP BOARD】(SIDE B)

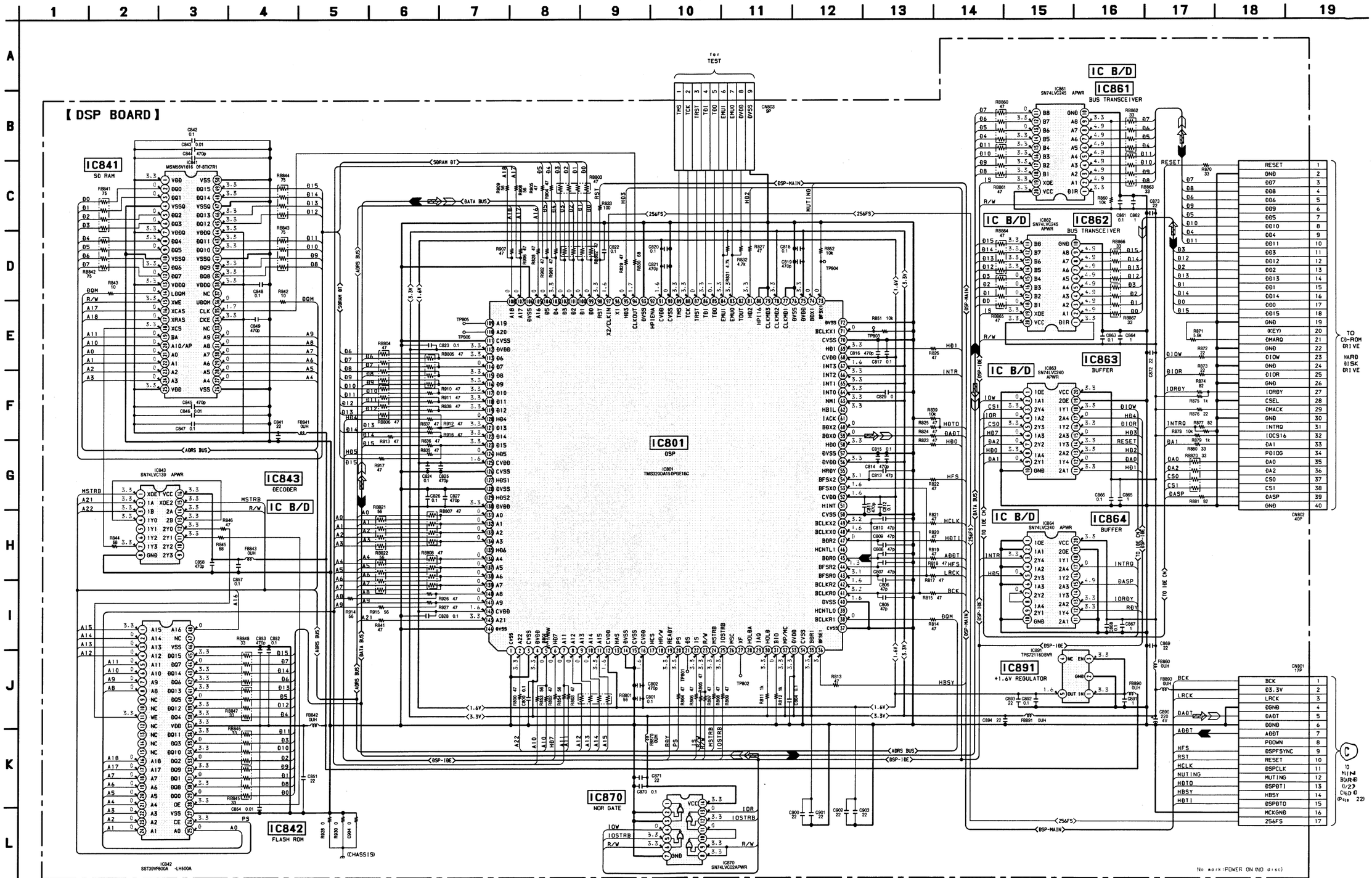


• **Semiconductor Location**

Ref. No.	Location
IC801	B-2
IC841	A-1
IC842	B-1
IC843	C-2
IC861	C-1
IC862	C-1
IC863	C-2
IC864	C-2
IC870	B-3
IC891	A-3

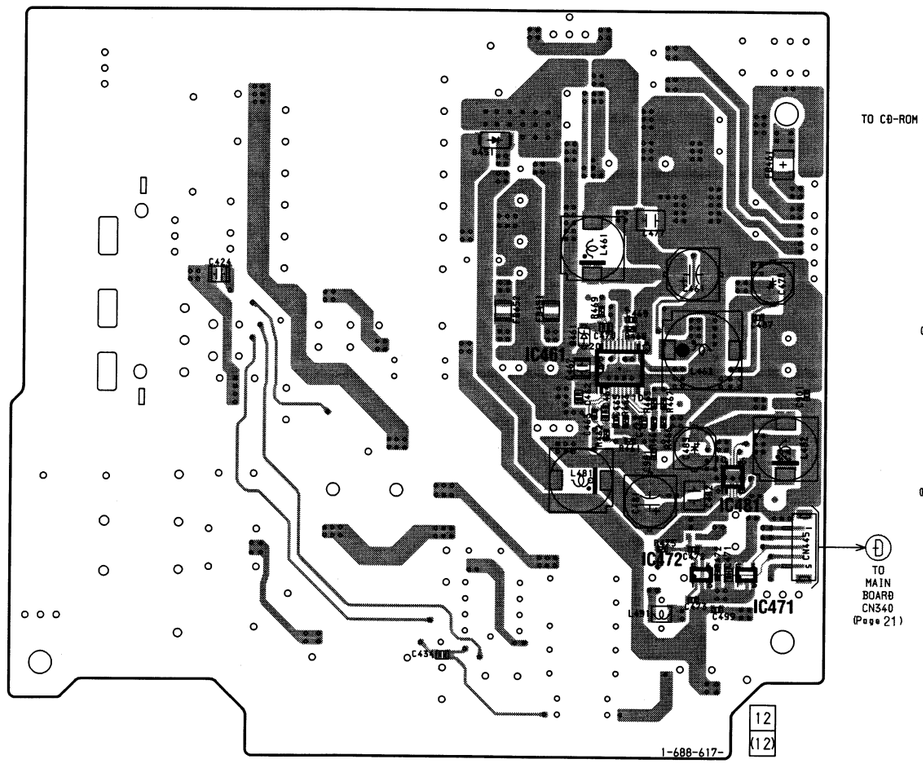
6-8. SCHEMATIC DIAGRAM – DSP SECTION –

• See page 30 for IC Block Diagram.

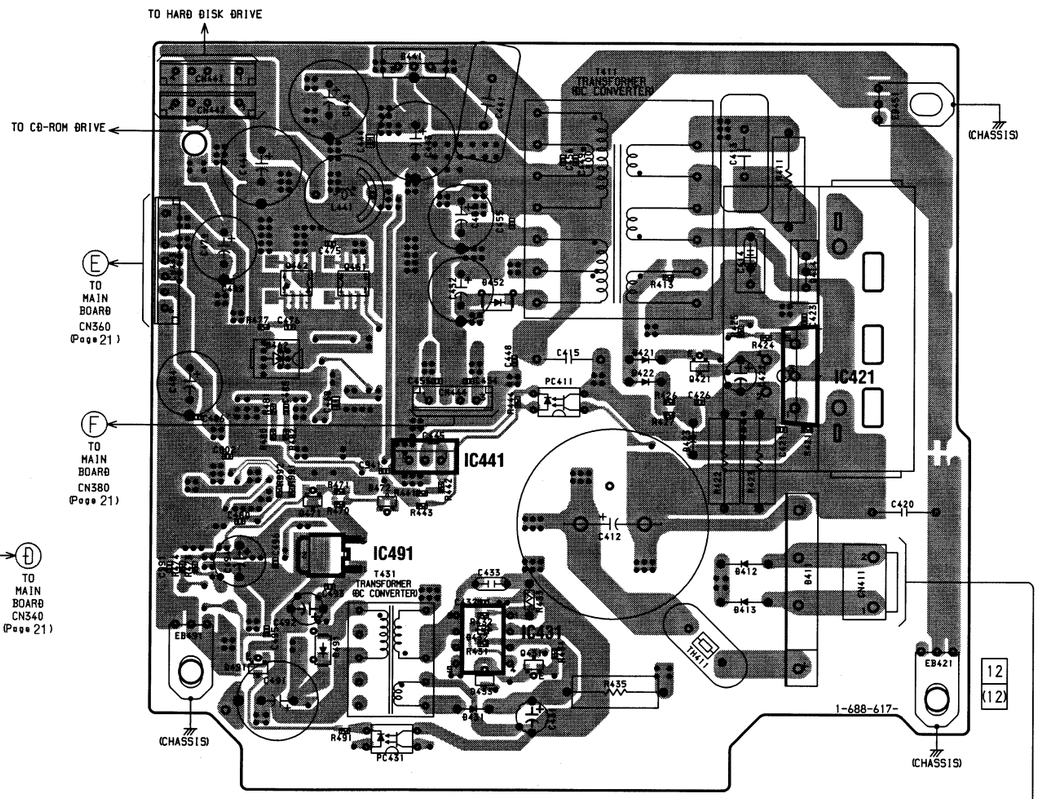


6-9. PRINTED WIRING BOARD – POWER SECTION – • See page 17 for Circuit Boards Location. • **LF** : Uses unleaded solder.

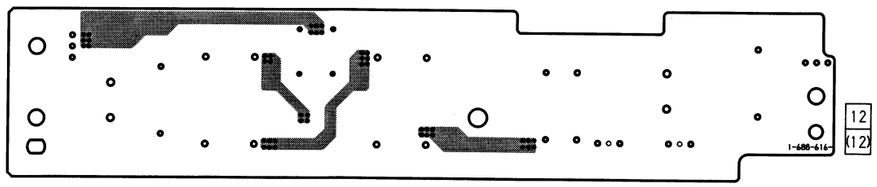
【POWER BOARD】(SIDE A)



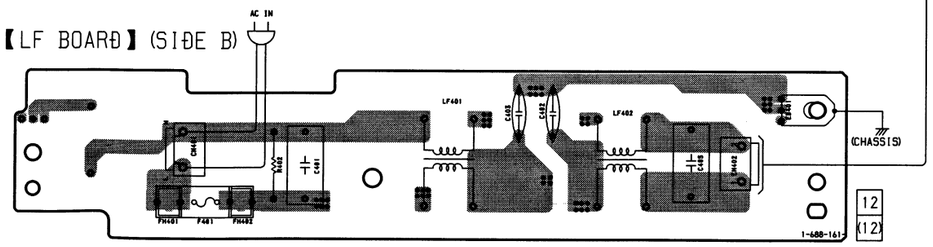
【POWER BOARD】(SIDE B)



【LF BOARD】(SIDE A)



【LF BOARD】(SIDE B)

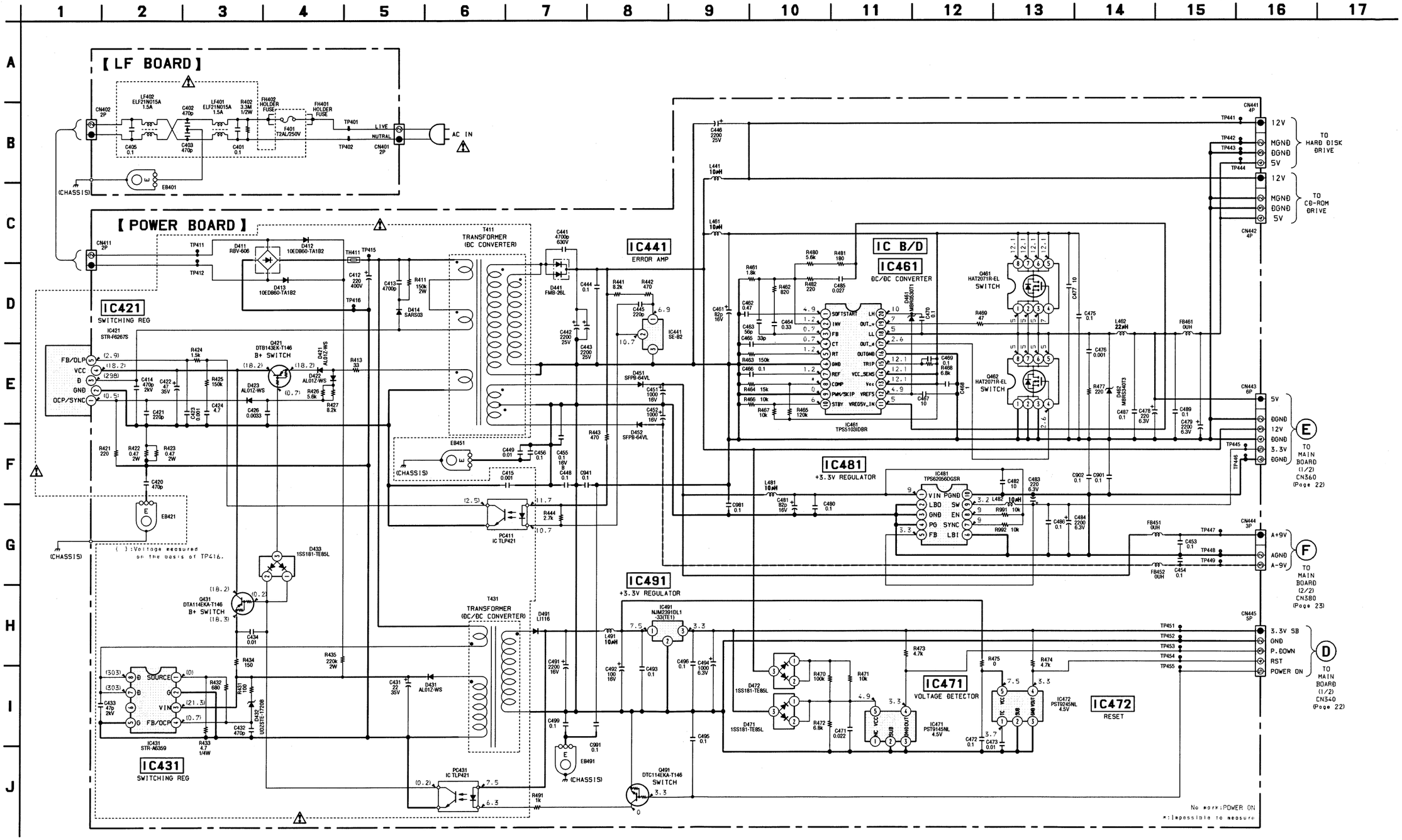


• **Semiconductor Location**

Ref. No.	Location
D411	C-7
D412	C-7
D413	C-7
D414	B-8
D421	B-7
D422	B-7
D423	C-7
D431	D-6
D432	C-6
D433	D-6
D441	A-6
D451	A-3
D452	B-6
D461	B-3
D462	B-5
D471	C-5
D472	C-6
D491	C-6
IC421	B-8
IC431	C-6
IC441	C-6
IC461	B-3
IC471	C-4
IC472	C-3
IC481	C-4
IC491	C-6
Q421	B-7
Q431	D-6
Q461	B-6
Q462	B-5
Q491	D-5

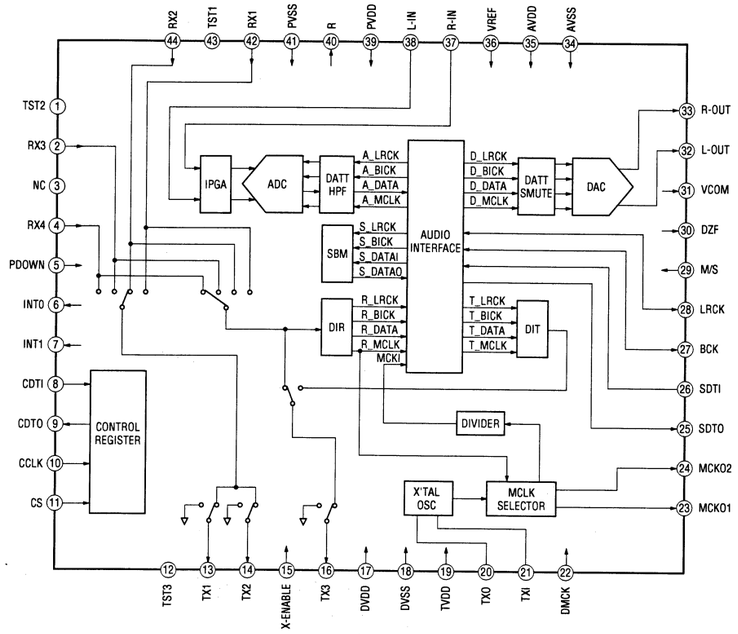
6-10. SCHEMATIC DIAGRAM – POWER SECTION –

• See page 31 for IC Block Diagram.

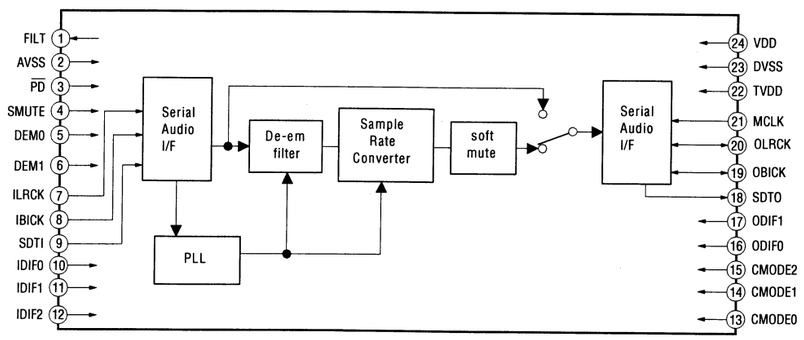


6-11. IC BLOCK DIAGRAMS
– MAIN BOARD –

IC500 AK4584VQ

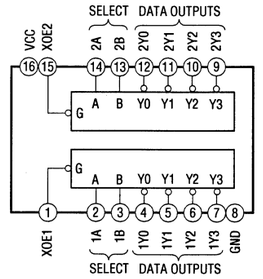


IC501 AK4121VF-E2

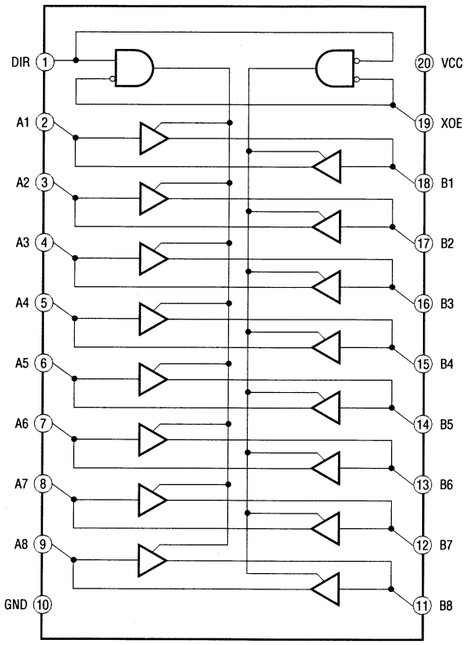


– DSP BOARD –

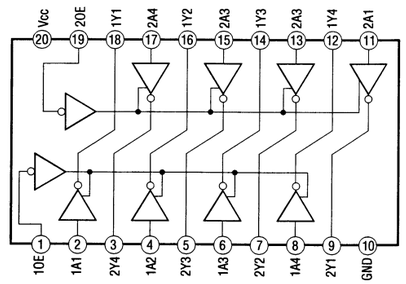
IC843 SN74LVC139APWR



IC861, 862 SN74LVC245APWR

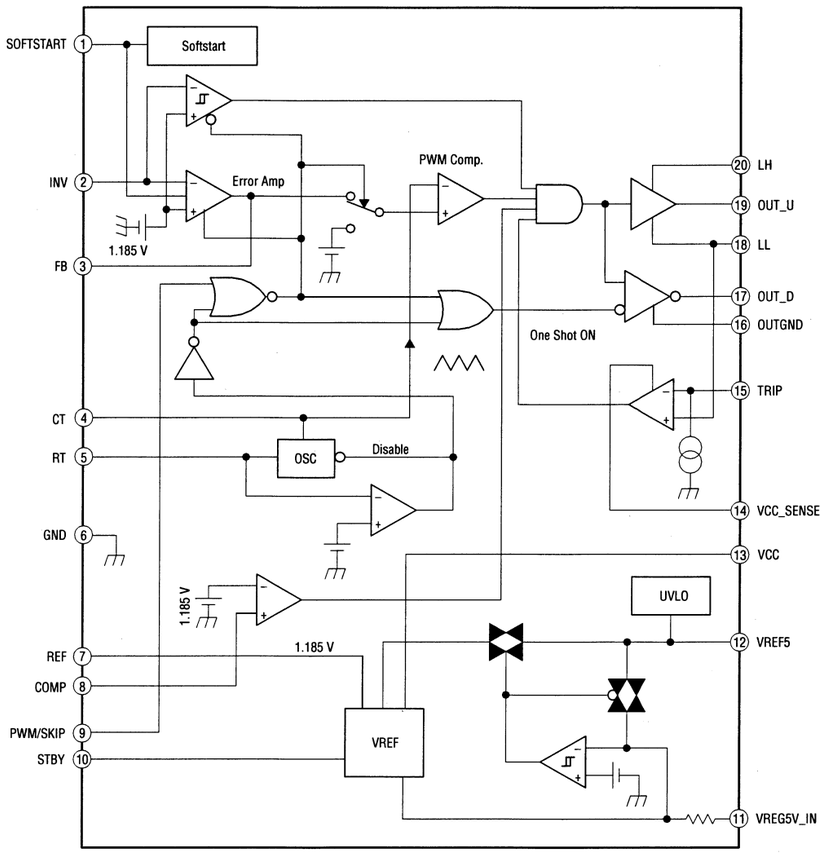


IC863, 864 SN74LVC240APWR



– POWER BOARD –

IC461 TPS5103IDBR



HAR-LH500

6-12. IC PIN FUNCTION DESCRIPTIONS

• IC600 M30245MC-100GP (SYSTEM CONTROLLER)(MAIN BOARD)

Pin No.	Pin Name	I/O	Description
1	VBUS	I	Vbus detection signal input
2	ATTACH	O	USB D+ pull-up control signal output
3	UVCC	—	Power supply terminal for USB
4	D+	I/O	USB D+ voltage line interface terminal
5	D-	I/O	USB D- voltage line interface terminal
6	BYTE	—	External memory data bus width selection terminal (fixed at "L") (16bit)
7	CNVSS	—	CPU mode switch input (L" : single chip mode, "H" : microprocessor mode)
8, 9	NC	—	Not used (open)
10	RESET	I	Reset signal input
11	XOUT	O	Main clock output (16MHz)
12	VSS	—	Ground terminal
13	XIN	I	Main clock input (16MHz)
14	VCC	—	Power supply terminal
15	NMI	I	Non-maskable interrupt input terminal (fixed at "H")
16	RMC	I	Remote control signal input
17	PDOWN	I	Power down detection signal input
18	KBCLK	I	Keyboard clock input
19	KBMUTE	O	Keyboard muting signal output
20	KBDATA	I	Keyboard data input
21	DSPBUSY	I	DSP busy signal input from the DSP (IC801)
22 to 24	NC	—	Not used (open)
25	DSPSYNC	O	DSP sync signal output to the DSP (IC801)
26	CCLK	O	Control data clock output to the ADC, DAC, DIF, DIR (IC500)
27	CDTO	I	Control data input from the ADC, DAC, DIF, DIR (IC500)
28	CDTI	O	Control data output to the ADC, DAC, DIF, DIR (IC500)
29	FLDT	O	Data output to the FL driver (IC700 and IC701)
30	RXD1	I	Not used (fixed at "L")
31	FLCK	O	Clock output to the FL driver (IC700 and IC701)
32	NC	—	Not used (open)
33	DSPDTO	O	Data output to the DSP (IC801)
34	DSPDTI	I	Data input from the DSP (IC801)
35	DSPCLK	O	Clock output to the DSP (IC801)
36	CSN	O	Chip select signal output to the ADC, DAC, DIF, DIR (IC500)
37	CINT1	—	Not used (fixed at "L")
38	CINT0	—	Not used (fixed at "L")
39	EPM	—	Not used (fixed at "L")
40	CDZF	—	Not used (fixed at "L")
41	SEL	O	Clock mode selection signal output to the sample rate converter (IC501)
42, 43	NC	—	Not used (open)
44	CE	—	Not used (fixed at "H")
45	STB	O	Power on/off control signal output
46	MUTE	O	Muting control signal output
47	AURST	O	Power down signal output to the ADC, DAC, DIF, DIR (IC500) ("L" : power down reset and initialize)
48	SRCRST	O	Power down signal output to the sample rate converter (IC501) ("L" : power down and reset)
49	SMUTE	O	Soft mute signal output to the sample rate converter (IC501)
50	DSPRST	O	Reset signal output to the DSP (IC801)
51, 52	NC	—	Not used (open)
53	SDA	I/O	Serial data input/output from/to the EEPROM (IC680)
54	SCL	O	Serial clock output to the EEPROM (IC680)
55	WP	O	Write protect signal output to the EEPROM (IC680)

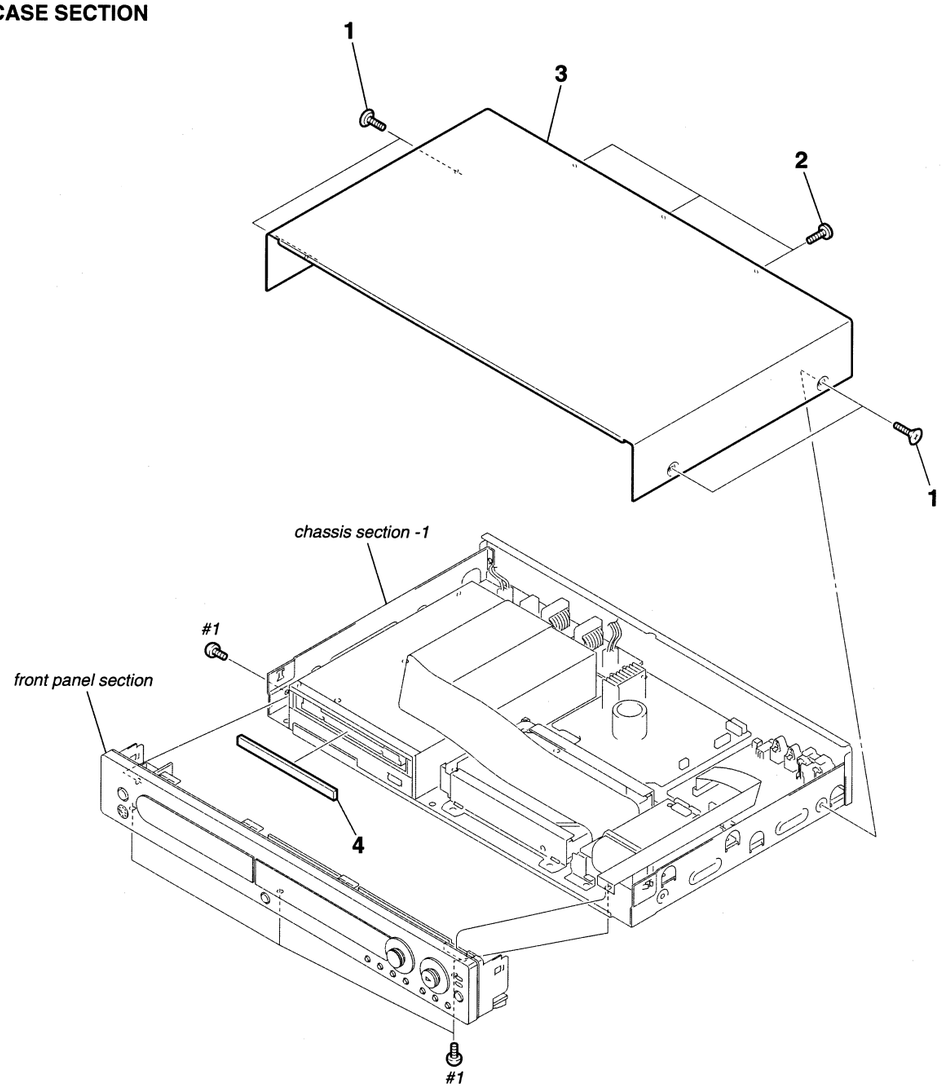
Pin No.	Pin Name	I/O	Description
56 to 59	NC	—	Not used (open)
60	VCC	—	Power supply terminal
61	NC	—	Not used (open)
62	VSS	—	Ground terminal
63 to 66	NC	—	Not used (open)
67	TP1	—	TP1 terminal
68	TP2	—	TP2 terminal
69	TP3	—	TP3 terminal
70	TP4	O	Attenuation control signal output
71 to 74	NC	—	Not used (open)
75	NC	—	Not used (fixed at "L")
76	NC	—	Not used (open)
77	LED0	O	HDD LED control signal output
78	LED1	O	CD LED control signal output
79	NC	—	Not used (open)
80	FLRST	O	Reset signal output to the FL driver (IC700 and IC701)
81	FLCS1	O	Chip select signal output to the FL driver (IC701)
82	FLCS0	O	Chip select signal output to the FL driver (IC700)
83, 84	NC	—	Not used (open)
85	JOG1	I	Encoder signal input from the album dial encoder (S751)
86	JOG0	I	Encoder signal input from the album dial encoder (S751)
87	NC	—	Not used (open)
88	KEY2	I	Key AD input 2
89	KEY1	I	Key AD input 1
90	KEY0	I	Key AD input 0
91 to 93	NC	—	Not used (open)
94	AVSS	—	Ground terminal (analog)
95	LPF	—	Low pass filter terminal for the frequency synthesizer circuit
96	VREF	—	Reference voltage input terminal
97	AVCC	—	Power supply terminal (analog)
98	DEST	I	Destination setting input terminal
99, 100	NC	—	Not used (open)

SECTION 7
EXPLODED VIEWS

NOTE:
- -XX, -X mean standardized parts, so they may have some differences from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list and accessories and packing materials are given in the last of this parts list.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

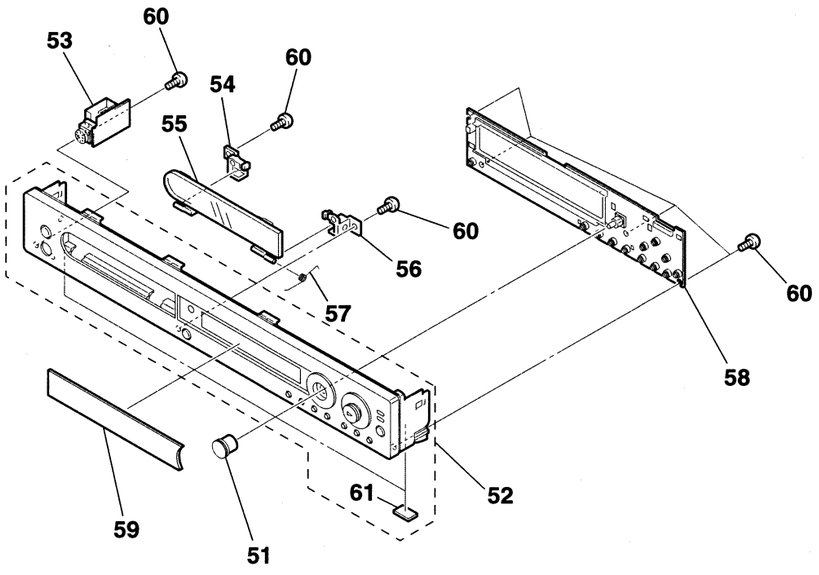
7-1. CASE SECTION



Ref. No.	Part No.	Description	Remarks
1	3-070-883-21	SCREW, TAPPING	
2	4-227-843-11	SCREW (TP), FLAT HEAD	
3	4-247-114-11	CASE	
4	4-247-103-01	PANEL (CD-ROM), LOADING	
#1	7-685-646-79	SCREW +BVTP 3X8 TYPE2 IT-3	

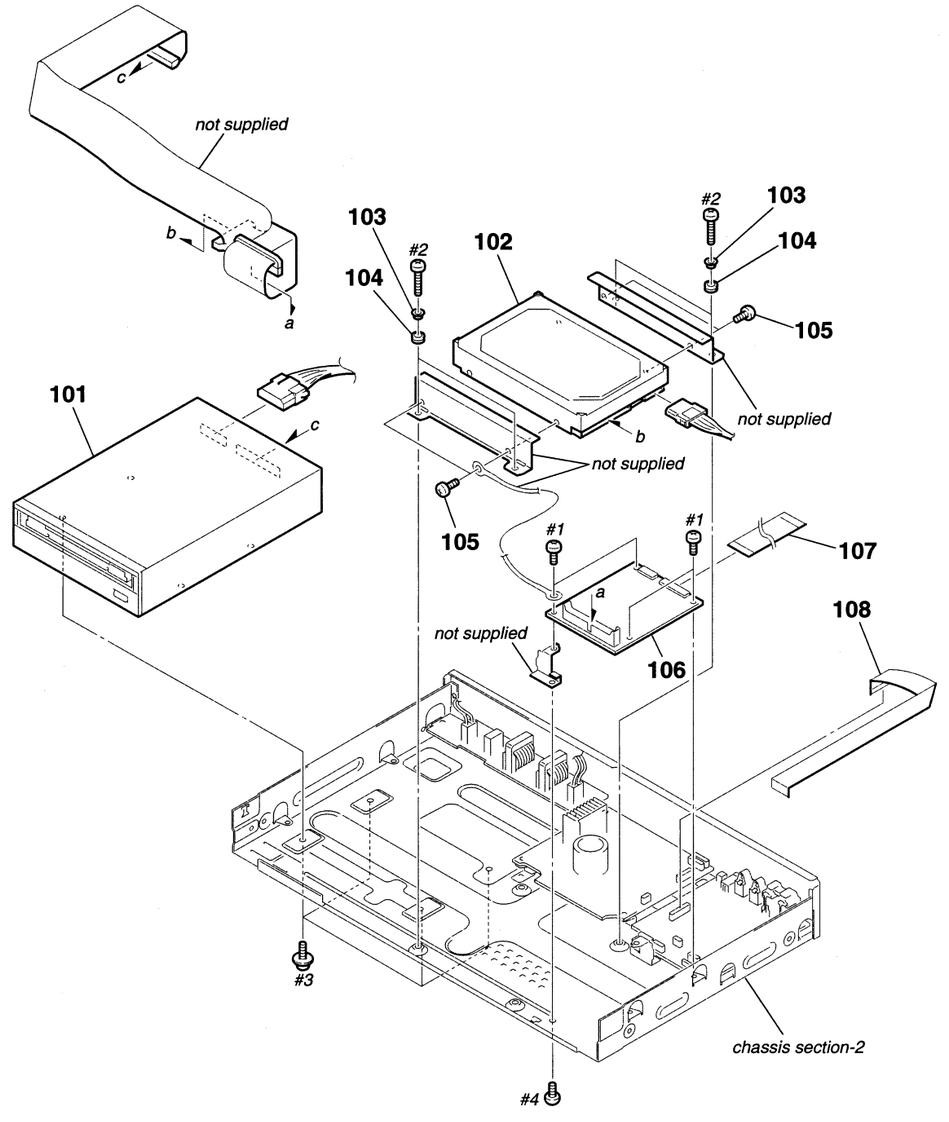
HAR-LH500

7-2. FRONT PANEL SECTION



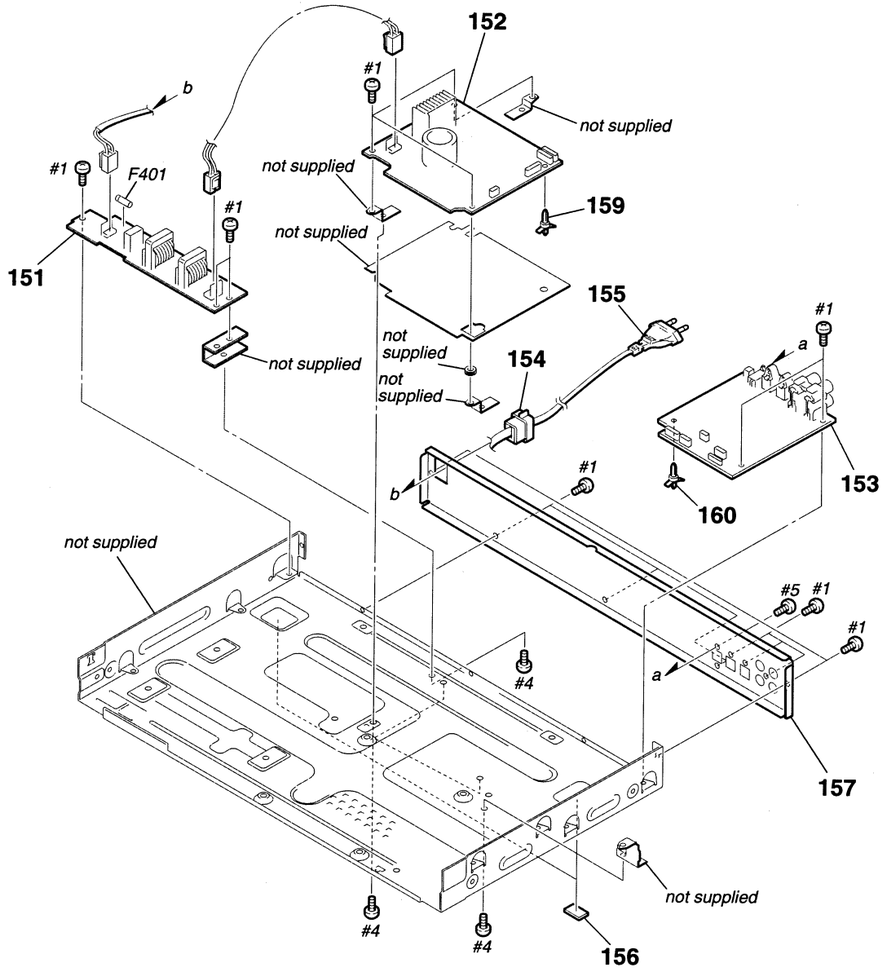
Ref. No.	Part No.	Description	Remarks
51	X-4955-660-1	KNOB (AMS) ASSY	
52	X-4955-658-2	PANEL ASSY, FRONT	
53	A-4733-657-A	KEYBOARD BOARD, COMPLETE	
54	4-247-109-01	STOPPER (LID)	
55	X-4955-659-1	LID ASSY	
56	4-247-109-11	STOPPER (LID)	
57	4-247-108-01	SPRING (LID), TORSION	
58	A-4733-656-A	DISPLAY BOARD, COMPLETE	
59	4-247-112-01	WINDOW (FL)	
60	4-951-620-01	SCREW (2.6X8), +BVTP	
61	4-977-358-01	CUSHION	

7-3. CHASSIS SECTION-1



Ref. No.	Part No.	Description	Remarks
101	1-796-775-11	DRIVE, CD-ROM	
102	1-796-792-11	DRIVE, HARD DISK	
103	4-236-512-01	COLLAR (HDD)	
* 104	4-888-798-00	BUSHING, RUBBER	
105	4-639-150-01	UNIFIED SCREW 4.5	
106	A-4733-654-A	DSP BOARD, COMPLETE	
107	1-827-513-11	WIRE (FLAT TYPE) (17 CORE)	
108	1-827-496-11	WIRE (FLAT TYPE) (19 CORE)	
#1	7-685-646-79	SCREW +BVTP 3X8 TYPE2 IT-3	
#2	7-685-873-09	SCREW +BVTT 3X10 (S)	
#3	7-682-903-21	SCREW +PWH 3X8	
#4	7-685-645-79	SCREW +BVTP 3X6 TYPE2 IT-3	

7-4. CHASSIS SECTION-2



Ref. No.	Part No.	Description	Remarks
151	1-688-616-12	LF BOARD	
152	A-4733-662-A	POWER BOARD, COMPLETE	
153	A-4733-666-A	MAIN BOARD, COMPLETE	
154	3-073-182-02	BUSHING, CODE	
⚠155	1-777-071-21	CORD, POWER	
156	4-977-358-01	CUSHION	
157	X-4956-072-1	PANEL ASSY, BACK	

Ref. No.	Part No.	Description	Remarks
* 159	4-924-098-01	HOLDER, PC BOARD	
* 160	4-924-098-21	HOLDER, PC BOARD	
⚠F401	1-576-622-11	FUSE (T2AL/250V)	
#1	7-685-646-79	SCREW +BVTP 3X8 TYPE2 IT-3	
#4	7-685-645-79	SCREW +BVTP 3X6 TYPE2 IT-3	
#5	7-685-871-01	SCREW +BVTT 3X6 (S)	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

SECTION 8
ELECTRICAL PARTS LIST

DISPLAY

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- CAPACITORS:
  uF: µF
- RESISTORS
  All resistors are in ohms.
  METAL: metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F: nonflammable
- COILS
  uH: µH
- SEMICONDUCTORS
  In each case, u: µ, for example:
  uA...: µA... , uPA... , µPA... ,
  uPB... , µPB... , uPC... , µPC... ,
  uPD..., µPD...

When indicating parts by reference number, please include the board name.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

Ref. No.	Part No.	Description			Remarks
	A-4733-656-A	DISPLAY BOARD, COMPLETE			
		**********			
	4-247-095-01	HOLDER (FL)			
		< CAPACITOR >			
C700	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	
C702	1-165-629-91	CERAMIC CHIP	1uF	10% 50V	
C703	1-216-864-11	METAL CHIP	0	5% 1/10W	
C704	1-216-864-11	METAL CHIP	0	5% 1/10W	
C705	1-216-864-11	METAL CHIP	0	5% 1/10W	
C706	1-136-894-11	ELECT	0.01uF	5.00% 50V	
C707	1-100-118-21	ELECT CHIP	82PF	20% 16V	
C710	1-163-021-91	CERAMIC CHIP	0.01uF	10.00% 50V	
C711	1-163-021-91	CERAMIC CHIP	0.01uF	10.00% 50V	
C712	1-128-407-11	ELECT CHIP	47uF	20% 50V	
C713	1-163-021-91	CERAMIC CHIP	0.01uF	10.00% 50V	
C714	1-100-421-21	ELECT CHIP	220uF	20% 6.3V	
C715	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	
C716	1-162-927-11	CERAMIC CHIP	100PF	5% 50V	
C717	1-162-927-11	CERAMIC CHIP	100PF	5% 50V	
C718	1-162-927-11	CERAMIC CHIP	100PF	5% 50V	
C719	1-162-927-11	CERAMIC CHIP	100PF	5% 50V	
C720	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	
C721	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	
C722	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	
C723	1-163-021-91	CERAMIC CHIP	0.01uF	10.00% 50V	
C724	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	
C725	1-162-927-11	CERAMIC CHIP	100PF	5% 50V	
C726	1-162-927-11	CERAMIC CHIP	100PF	5% 50V	
C727	1-162-927-11	CERAMIC CHIP	100PF	5% 50V	
C728	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	
C741	1-164-816-11	CERAMIC CHIP	220PF	2.00% 50V	
C742	1-164-816-11	CERAMIC CHIP	220PF	2.00% 50V	
C743	1-164-816-11	CERAMIC CHIP	220PF	2.00% 50V	
C744	1-164-816-11	CERAMIC CHIP	220PF	2.00% 50V	
C745	1-164-816-11	CERAMIC CHIP	220PF	2.00% 50V	
C746	1-164-816-11	CERAMIC CHIP	220PF	2.00% 50V	
C747	1-164-816-11	CERAMIC CHIP	220PF	2.00% 50V	
C748	1-164-816-11	CERAMIC CHIP	220PF	2.00% 50V	
C749	1-164-816-11	CERAMIC CHIP	220PF	2.00% 50V	
C750	1-164-816-11	CERAMIC CHIP	220PF	2.00% 50V	
C751	1-164-816-11	CERAMIC CHIP	220PF	2.00% 50V	
C752	1-164-816-11	CERAMIC CHIP	220PF	2.00% 50V	
C753	1-164-816-11	CERAMIC CHIP	220PF	2.00% 50V	
C754	1-164-816-11	CERAMIC CHIP	220PF	2.00% 50V	
C755	1-164-315-11	CERAMIC CHIP	470PF	5.00% 50V	
C756	1-164-315-11	CERAMIC CHIP	470PF	5.00% 50V	
C761	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	
C762	1-100-159-91	CERAMIC CHIP	22uF	10% 6.3V	
C763	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	
C765	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	
C791	1-216-864-11	METAL CHIP	0	5% 1/10W	
C792	1-216-864-11	METAL CHIP	0	5% 1/10W	
		< CONNECTOR >			
CN700	1-784-871-21	CONNECTOR, FFC (LIF (NON-ZIF)) 19P			
		< DIODE >			
D700	6-500-536-01	DIODE PTZFTE256.2A			
D701	8-719-041-97	DIODE MA113- (TX)			
D702	8-719-041-97	DIODE MA113- (TX)			
D703	8-719-041-97	DIODE MA113- (TX)			
D704	8-719-041-97	DIODE MA113- (TX)			
D705	8-719-032-98	DIODE SEL5820A-TP15 (CD)			
D706	8-719-084-07	DIODE SEL5E20CTP15 (HDD)			
		< TERMINAL >			
* EPT791	1-690-880-41	LEAD (WITH CONNECTOR)			
		< FERRITE BEAD >			
FB761	1-469-981-21	FERRITE 0uH			
		< INDICATOR TUBE >			
FL700	1-518-927-11	INDICATOR TUBE, FLUORESCENT			
		< IC >			
IC700	6-703-709-01	IC M66005-0131AFP280D			
IC701	6-703-709-01	IC M66005-0131AFP280D			
IC702	6-600-256-01	IC GP1UE27SXK0F (■)			
		< COIL >			
L700	1-412-537-31	INDUCTOR 100uH			
L701	1-412-537-31	INDUCTOR 100uH			
		< TRANSISTOR >			
Q701	8-729-808-42	TRANSISTOR 2SD1624-T-TD			
Q702	8-729-808-42	TRANSISTOR 2SD1624-T-TD			
Q703	8-729-907-00	TRANSISTOR DTC114EUA-T106			
Q704	8-729-907-00	TRANSISTOR DTC114EUA-T106			

DISPLAY **DSP**

Ref. No.	Part No.	Description			Remarks
Q710	8-729-141-73	TRANSISTOR	2SC3624A-T1L15L16		
Q711	8-729-141-73	TRANSISTOR	2SC3624A-T1L15L16		
		< RESISTOR >			
R700	1-216-025-11	RES-CHIP	100	5%	1/10W
R701	1-216-025-11	RES-CHIP	100	5%	1/10W
R702	1-216-833-11	METAL CHIP	10K	5%	1/10W
R703	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R710	1-216-845-11	METAL CHIP	100K	5%	1/10W
R711	1-216-845-11	METAL CHIP	100K	5%	1/10W
R712	1-216-809-11	METAL CHIP	100	5%	1/10W
R713	1-216-809-11	METAL CHIP	100	5%	1/10W
R714	1-216-809-11	METAL CHIP	100	5%	1/10W
R715	1-469-981-21	FERRITE	0uH		
R716	1-216-809-11	METAL CHIP	100	5%	1/10W
R717	1-216-809-11	METAL CHIP	100	5%	1/10W
R718	1-216-809-11	METAL CHIP	100	5%	1/10W
R719	1-469-981-21	FERRITE	0uH		
R720	1-216-833-11	METAL CHIP	10K	5%	1/10W
R731	1-216-821-11	METAL CHIP	1K	5%	1/10W
R732	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R733	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R734	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R741	1-216-821-11	METAL CHIP	1K	5%	1/10W
R742	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R743	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R751	1-216-821-11	METAL CHIP	1K	5%	1/10W
R752	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R753	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R754	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R761	1-216-809-11	METAL CHIP	100	5%	1/10W
R762	1-216-805-11	METAL CHIP	47	5%	1/10W
R764	1-216-813-11	METAL CHIP	220	5%	1/10W
R765	1-216-817-11	METAL CHIP	470	5%	1/10W
R766	1-216-805-11	METAL CHIP	47	5%	1/10W
R767	1-216-833-11	METAL CHIP	10K	5%	1/10W
R768	1-216-841-11	METAL CHIP	47K	5%	1/10W
R770	1-216-809-11	METAL CHIP	100	5%	1/10W
R771	1-216-809-11	METAL CHIP	100	5%	1/10W
R790	1-216-864-11	METAL CHIP	0	5%	1/10W
		< SWITCH >			
S732	1-762-875-21	SWITCH, KEYBOARD (CD/HDD)			
S733	1-762-875-21	SWITCH, KEYBOARD (CD SYNC)			
S734	1-762-875-21	SWITCH, KEYBOARD (■)			
S735	1-762-875-21	SWITCH, KEYBOARD (❚❚)			
S741	1-771-349-41	SWITCH, KEYBOARD (▷▷❙)			
S742	1-762-875-21	SWITCH, KEYBOARD (▷)			
S743	1-771-349-41	SWITCH, KEYBOARD (❙◁◁)			
S744	1-762-875-21	SWITCH, KEYBOARD (YES)			
S751	1-475-235-31	ENCODER, ROTARY (ALBUM (+/-) PUSH ENTER)			
S752	1-762-875-21	SWITCH, KEYBOARD (MENU/NO)			
S753	1-762-875-21	SWITCH, KEYBOARD (ARTIST)			
S754	1-762-875-21	SWITCH, KEYBOARD (DISPLAY/CHAR)			
S755	1-762-875-21	SWITCH, KEYBOARD (⏏)			

Ref. No.	Part No.	Description			Remarks
		< TRANSFORMER >			
T700	1-439-993-11	TRANSFORMER, DC CONVERTER			
**********					
	A-4733-654-A	DSP BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C800	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C801	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C802	1-164-315-11	CERAMIC CHIP	470PF	5.00%	50V
C804	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C805	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C806	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C807	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C808	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C809	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C810	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C811	1-164-315-11	CERAMIC CHIP	470PF	5.00%	50V
C812	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C813	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C814	1-164-315-11	CERAMIC CHIP	470PF	5.00%	50V
C815	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C816	1-164-315-11	CERAMIC CHIP	470PF	5.00%	50V
C817	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C818	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C819	1-164-315-11	CERAMIC CHIP	470PF	5.00%	50V
C820	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C821	1-164-315-11	CERAMIC CHIP	470PF	5.00%	50V
C822	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C823	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C824	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C825	1-164-315-11	CERAMIC CHIP	470PF	5.00%	50V
C826	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C827	1-164-315-11	CERAMIC CHIP	470PF	5.00%	50V
C828	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C829	1-216-864-11	METAL CHIP	0	5%	1/10W
C841	1-100-159-91	CERAMIC CHIP	22uF	10%	6.3V
C842	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C843	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C844	1-164-315-11	CERAMIC CHIP	470PF	5.00%	50V
C845	1-164-315-11	CERAMIC CHIP	470PF	5.00%	50V
C846	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C847	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C848	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C849	1-164-315-11	CERAMIC CHIP	470PF	5.00%	50V
C851	1-100-159-91	CERAMIC CHIP	22uF	10%	6.3V
C852	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C853	1-164-315-11	CERAMIC CHIP	470PF	5.00%	50V
C854	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C857	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C858	1-164-315-11	CERAMIC CHIP	470PF	5.00%	50V
C861	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C862	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C863	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C864	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C865	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C866	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V

DSP

Ref. No.	Part No.	Description			Remarks
C867	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C868	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C869	1-100-159-91	CERAMIC CHIP	22uF	10%	6.3V
C870	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C871	1-100-159-91	CERAMIC CHIP	22uF	10%	6.3V
C872	1-100-159-91	CERAMIC CHIP	22uF	10%	6.3V
C873	1-100-159-91	CERAMIC CHIP	22uF	10%	6.3V
C890	1-126-246-11	ELECT CHIP	220uF	20%	4V
C891	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C892	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C893	1-100-159-91	CERAMIC CHIP	22uF	10%	6.3V
C894	1-100-159-91	CERAMIC CHIP	22uF	10%	6.3V
C900	1-100-159-91	CERAMIC CHIP	22uF	10%	6.3V
C901	1-100-159-91	CERAMIC CHIP	22uF	10%	6.3V
C902	1-100-159-91	CERAMIC CHIP	22uF	10%	6.3V
C903	1-100-159-91	CERAMIC CHIP	22uF	10%	6.3V
C904	1-216-864-11	METAL CHIP	0	5%	1/10W
		< CONNECTOR >			
CN801	1-784-869-21	CONNECTOR, FFC (LIF (NON-ZIF)) 17P			
CN802	1-794-518-11	PIN, CONNECTOR (PRINT PWB) 40P			
CN803	1-784-861-21	CONNECTOR, FFC (LIF (NON-ZIF)) 9P			
		< FERRITE BEAD >			
FB841	1-469-981-21	FERRITE	0uH		
FB842	1-469-981-21	FERRITE	0uH		
FB843	1-469-981-21	FERRITE	0uH		
FB860	1-469-981-21	FERRITE	0uH		
FB870	1-469-981-21	FERRITE	0uH		
FB890	1-469-981-21	FERRITE	0uH		
FB891	1-469-981-21	FERRITE	0uH		
FB893	1-469-835-21	FERRITE	0uH		
		< IC >			
IC801	6-704-504-01	IC TMS320DA150PGE16C			
IC841	6-702-336-01	IC MSM56V16160F-8TK7R1			
IC842	6-803-263-01	IC SST39VF800A-LH500A			
IC843	8-759-549-05	IC SN74LVC139APWR			
IC861	8-759-392-77	IC SN74LVC245APWR			
IC862	8-759-392-77	IC SN74LVC245APWR			
IC863	8-759-585-54	IC SN74LVC240APWR			
IC864	8-759-585-54	IC SN74LVC240APWR			
* IC870	8-759-679-56	IC SN74LVC02APWR			
IC891	6-704-505-01	IC TPS72116DBVR			
		< RESISTOR >			
R800	1-216-805-11	METAL CHIP	47	5%	1/10W
R801	1-216-805-11	METAL CHIP	47	5%	1/10W
R802	1-216-805-11	METAL CHIP	47	5%	1/10W
R803	1-216-805-11	METAL CHIP	47	5%	1/10W
R804	1-216-805-11	METAL CHIP	47	5%	1/10W
R805	1-216-805-11	METAL CHIP	47	5%	1/10W
R806	1-216-805-11	METAL CHIP	47	5%	1/10W
R807	1-216-805-11	METAL CHIP	47	5%	1/10W
R808	1-216-805-11	METAL CHIP	47	5%	1/10W
R809	1-216-805-11	METAL CHIP	47	5%	1/10W
R811	1-216-821-11	METAL CHIP	1K	5%	1/10W
R812	1-216-821-11	METAL CHIP	1K	5%	1/10W

Ref. No.	Part No.	Description			Remarks
R813	1-216-805-11	METAL CHIP	47	5%	1/10W
R814	1-216-805-11	METAL CHIP	47	5%	1/10W
R815	1-216-805-11	METAL CHIP	47	5%	1/10W
R817	1-216-805-11	METAL CHIP	47	5%	1/10W
R818	1-216-805-11	METAL CHIP	47	5%	1/10W
R819	1-216-805-11	METAL CHIP	47	5%	1/10W
R820	1-216-805-11	METAL CHIP	47	5%	1/10W
R821	1-216-805-11	METAL CHIP	47	5%	1/10W
R822	1-216-805-11	METAL CHIP	47	5%	1/10W
R823	1-216-805-11	METAL CHIP	47	5%	1/10W
R824	1-216-805-11	METAL CHIP	47	5%	1/10W
R825	1-216-805-11	METAL CHIP	47	5%	1/10W
R826	1-216-805-11	METAL CHIP	47	5%	1/10W
R827	1-216-805-11	METAL CHIP	47	5%	1/10W
R828	1-216-805-11	METAL CHIP	47	5%	1/10W
R829	1-216-805-11	METAL CHIP	47	5%	1/10W
R830	1-216-807-11	METAL CHIP	68	5%	1/10W
R831	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R832	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R833	1-216-809-11	METAL CHIP	100	5%	1/10W
R835	1-216-805-11	METAL CHIP	47	5%	1/10W
R836	1-216-805-11	METAL CHIP	47	5%	1/10W
R837	1-216-805-11	METAL CHIP	47	5%	1/10W
R838	1-216-805-11	METAL CHIP	47	5%	1/10W
R839	1-216-833-11	METAL CHIP	10K	5%	1/10W
R841	1-216-805-11	METAL CHIP	47	5%	1/10W
R842	1-216-797-11	METAL CHIP	10	5%	1/10W
R843	1-216-797-11	METAL CHIP	10	5%	1/10W
R844	1-216-807-11	METAL CHIP	68	5%	1/10W
R845	1-216-807-11	METAL CHIP	68	5%	1/10W
R846	1-216-805-11	METAL CHIP	47	5%	1/10W
R851	1-216-833-11	METAL CHIP	10K	5%	1/10W
R852	1-216-833-11	METAL CHIP	10K	5%	1/10W
R853	1-216-806-11	METAL CHIP	56	5%	1/10W
R854	1-216-806-11	METAL CHIP	56	5%	1/10W
R860	1-216-833-11	METAL CHIP	10K	5%	1/10W
R870	1-216-803-11	METAL CHIP	33	5%	1/10W
R871	1-216-830-11	METAL CHIP	5.6K	5%	1/10W
R872	1-216-801-11	METAL CHIP	22	5%	1/10W
R873	1-216-801-11	METAL CHIP	22	5%	1/10W
R874	1-216-808-11	METAL CHIP	82	5%	1/10W
R875	1-216-821-11	METAL CHIP	1K	5%	1/10W
R876	1-216-801-11	METAL CHIP	22	5%	1/10W
R877	1-216-808-11	METAL CHIP	82	5%	1/10W
R878	1-216-833-11	METAL CHIP	10K	5%	1/10W
R879	1-216-821-11	METAL CHIP	1K	5%	1/10W
R880	1-216-803-11	METAL CHIP	33	5%	1/10W
R881	1-216-808-11	METAL CHIP	82	5%	1/10W
R901	1-216-805-11	METAL CHIP	47	5%	1/10W
R902	1-216-805-11	METAL CHIP	47	5%	1/10W
R904	1-216-805-11	METAL CHIP	47	5%	1/10W
R905	1-216-805-11	METAL CHIP	47	5%	1/10W
R906	1-216-805-11	METAL CHIP	47	5%	1/10W
R907	1-216-805-11	METAL CHIP	47	5%	1/10W
R908	1-216-806-11	METAL CHIP	56	5%	1/10W
R909	1-216-806-11	METAL CHIP	56	5%	1/10W
R910	1-216-805-11	METAL CHIP	47	5%	1/10W
R911	1-216-805-11	METAL CHIP	47	5%	1/10W

DSP KEYBOARD LF MAIN

Ref. No.	Part No.	Description			Remarks
R912	1-216-805-11	METAL CHIP	47	5%	1/10W
R913	1-216-805-11	METAL CHIP	47	5%	1/10W
R914	1-216-806-11	METAL CHIP	56	5%	1/10W
R915	1-216-806-11	METAL CHIP	56	5%	1/10W
R916	1-216-805-11	METAL CHIP	47	5%	1/10W
R917	1-216-805-11	METAL CHIP	47	5%	1/10W
R926	1-216-805-11	METAL CHIP	47	5%	1/10W
R927	1-216-805-11	METAL CHIP	47	5%	1/10W
R928	1-216-864-11	METAL CHIP	0	5%	1/10W
R930	1-216-864-11	METAL CHIP	0	5%	1/10W
		< NETWORK RESISTOR >			
RB801	1-234-714-11	RES, NETWORK 56X4			(1005)
RB802	1-234-371-21	RES, NETWORK 47X4			(1005)
RB803	1-234-371-21	RES, NETWORK 47X4			(1005)
RB804	1-234-371-21	RES, NETWORK 47X4			(1005)
RB805	1-234-371-21	RES, NETWORK 47X4			(1005)
RB806	1-234-371-21	RES, NETWORK 47X4			(1005)
RB807	1-234-371-21	RES, NETWORK 47X4			(1005)
RB808	1-234-371-21	RES, NETWORK 47X4			(1005)
RB821	1-234-714-11	RES, NETWORK 56X4			(1005)
RB822	1-234-714-11	RES, NETWORK 56X4			(1005)
RB841	1-234-723-11	RES, NETWORK 75X4			(1005)
RB842	1-234-723-11	RES, NETWORK 75X4			(1005)
RB843	1-234-723-11	RES, NETWORK 75X4			(1005)
RB844	1-234-723-11	RES, NETWORK 75X4			(1005)
RB845	1-242-963-21	RES, NETWORK 33X4			(1005)
RB846	1-242-963-21	RES, NETWORK 33X4			(1005)
RB847	1-242-963-21	RES, NETWORK 33X4			(1005)
RB848	1-242-963-21	RES, NETWORK 33X4			(1005)
RB860	1-234-371-21	RES, NETWORK 47X4			(1005)
RB861	1-234-371-21	RES, NETWORK 47X4			(1005)
RB862	1-242-963-21	RES, NETWORK 33X4			(1005)
RB863	1-242-963-21	RES, NETWORK 33X4			(1005)
RB864	1-234-371-21	RES, NETWORK 47X4			(1005)
RB865	1-234-371-21	RES, NETWORK 47X4			(1005)
RB866	1-242-963-21	RES, NETWORK 33X4			(1005)
RB867	1-242-963-21	RES, NETWORK 33X4			(1005)
RB870	1-242-963-21	RES, NETWORK 33X4			(1005)
**********					
	A-4733-657-A	KEYBOARD BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C781	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C784	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C785	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C786	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C787	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C788	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
		< CONNECTOR >			
CN781	1-580-756-21	PIN, CONNECTOR (SMD) 7P			
		< FERRITE BEAD >			
FB781	1-469-450-21	FERRITE	0uH		

Ref. No.	Part No.	Description			Remarks
		< JACK >			
J780	1-785-945-11	CONNECTOR, DIN (KEYBOARD)			
		< COIL >			
L780	1-469-981-21	FERRITE	0uH		
L781	1-469-981-21	FERRITE	0uH		
L782	1-216-864-11	METAL CHIP	0	5%	1/10W
		< RESISTOR >			
R782	1-216-813-11	METAL CHIP	220	5%	1/10W
R783	1-216-813-11	METAL CHIP	220	5%	1/10W
		< SWITCH >			
S781	1-571-532-21	SWITCH, TACTIL (I/⏻)			
**********					
	1-688-616-12	LF BOARD			
		*********			
		< CAPACITOR >			
⚠C401	1-104-705-11	MYLAR	0.1uF	20.00%	250V
⚠C402	1-113-900-11	CERAMIC	470PF	10.00%	250V
⚠C403	1-113-900-11	CERAMIC	470PF	10.00%	250V
⚠C405	1-104-705-11	MYLAR	0.1uF	20.00%	250V
		< CONNECTOR >			
CN401	1-564-321-00	PIN, CONNECTOR (3.96mm PITCH) 2P			
CN402	1-564-321-00	PIN, CONNECTOR (3.96mm PITCH) 2P			
		< TERMINAL >			
EB401	1-537-738-21	TERMINAL, GROUND			
		< LINE FILTER >			
⚠LF401	1-456-082-11	COIL, LINE FILTER			
⚠LF402	1-456-082-11	COIL, LINE FILTER			
		< RESISTOR >			
⚠R402	1-219-237-11	SOLID	3.3M	20%	1/2W
**********					
	A-4733-666-A	MAIN BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C4	1-216-864-11	METAL CHIP	0	5%	1/10W
C60	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C61	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C111	1-136-356-11	MYLAR	470PF	5.00%	50V
C112	1-126-395-11	ELECT	22uF	20%	16V
C113	1-126-395-11	ELECT	22uF	20%	16V
C170	1-119-800-11	ELECT	100uF	20.00%	25V
C171	1-137-503-11	MYLAR	0.0001uF	5.00%	50V
C174	1-119-800-11	ELECT	100uF	20.00%	25V
C175	1-130-471-00	MYLAR	0.001uF	5%	50V
C191	1-137-374-11	MYLAR	0.047uF	5.00%	50V
C211	1-136-356-11	MYLAR	470PF	5.00%	50V

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

MAIN

Ref. No.	Part No.	Description			Remarks
C212	1-126-395-11	ELECT	22uF	20%	16V
C213	1-126-395-11	ELECT	22uF	20%	16V
C270	1-119-800-11	ELECT	100uF	20.00%	25V
C271	1-137-503-11	MYLAR	0.0001uF	5.00%	50V
C274	1-119-800-11	ELECT	100uF	20.00%	25V
C275	1-130-471-00	MYLAR	0.001uF	5%	50V
C291	1-137-374-11	MYLAR	0.047uF	5.00%	50V
C322	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C327	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C331	1-135-710-91	ELECT	220uF		16V
C332	1-136-165-00	FILM	0.1uF	5%	50V
C336	1-135-710-91	ELECT	220uF		16V
C337	1-136-165-00	FILM	0.1uF	5%	50V
C340	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C341	1-126-209-11	ELECT CHIP	100uF	20.00%	4V
C350	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C360	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C361	1-127-692-11	CERAMIC CHIP	10uF	10.00%	6.3V
C362	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C364	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C365	1-126-209-11	ELECT CHIP	100uF	20.00%	4V
C370	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C371	1-115-416-11	CERAMIC CHIP	0.001uF	5.00%	25V
C380	1-126-935-11	ELECT	470uF	20.00%	16V
C381	1-126-935-11	ELECT	470uF	20.00%	16V
C382	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C383	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C384	1-126-933-11	ELECT	100uF	20.00%	16V
C390	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C391	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C392	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C393	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C394	1-126-933-11	ELECT	100uF	20.00%	16V
C395	1-126-933-11	ELECT	100uF	20.00%	16V
C501	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C505	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C517	1-117-681-11	ELECT CHIP	100uF	20.00%	16V
C518	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C519	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C520	1-117-681-11	ELECT CHIP	100uF	20.00%	16V
C521	1-127-692-11	CERAMIC CHIP	10uF	10.00%	6.3V
C522	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C523	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C524	1-115-416-11	CERAMIC CHIP	0.001uF	5.00%	25V
C525	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C526	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C530	1-117-681-11	ELECT CHIP	100uF	20.00%	16V
C531	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C534	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C535	1-117-681-11	ELECT CHIP	100uF	20.00%	16V
C537	1-117-681-11	ELECT CHIP	100uF	20.00%	16V
C538	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C539	1-127-692-11	CERAMIC CHIP	10uF	10.00%	6.3V
C551	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C552	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C553	1-216-864-11	METAL CHIP	0	5%	1/10W
C554	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C555	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V

Ref. No.	Part No.	Description			Remarks
C557	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C558	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C559	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C560	1-216-864-11	METAL CHIP	0	5%	1/10W
C562	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C563	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C564	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C565	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C567	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C580	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C581	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C582	1-100-159-91	CERAMIC CHIP	22uF	10%	6.3V
C600	1-117-681-11	ELECT CHIP	100uF	20.00%	16V
C601	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C602	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C603	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C604	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C605	1-100-159-91	CERAMIC CHIP	22uF	10%	6.3V
C606	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C607	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C610	1-115-416-11	CERAMIC CHIP	0.001uF	5.00%	25V
C611	1-115-416-11	CERAMIC CHIP	0.001uF	5.00%	25V
C612	1-115-416-11	CERAMIC CHIP	0.001uF	5.00%	25V
C615	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C616	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C617	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C618	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C619	1-115-416-11	CERAMIC CHIP	0.001uF	5.00%	25V
C621	1-115-412-11	CERAMIC CHIP	680PF	5.00%	25V
C622	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C623	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C624	1-126-209-11	ELECT CHIP	100uF	20.00%	4V
C625	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C626	1-127-692-11	CERAMIC CHIP	10uF	10.00%	6.3V
C627	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C628	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C630	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C631	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C632	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C633	1-117-681-11	ELECT CHIP	100uF	20.00%	16V
C634	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C635	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C636	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C637	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C638	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C641	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C650	1-127-692-11	CERAMIC CHIP	10uF	10.00%	6.3V
C652	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C654	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C655	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C680	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C681	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C690	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C691	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C692	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C693	1-216-864-11	METAL CHIP	0	5%	1/10W

MAIN

Ref. No.	Part No.	Description			Remarks
		< CONNECTOR >			
CN1	1-815-194-11	CONNECTOR, USB (B)(USB ψ)			
CN340	1-784-922-11	PIN, CONNECTOR 5P			
CN360	1-779-977-11	PIN, CONNECTOR 6P			
CN380	1-779-978-11	PIN, CONNECTOR 3P			
CN600	1-784-376-11	CONNECTOR, FFC/FPC 17P			
CN601	1-778-691-11	CONNECTOR, FFC/FPC 19P			
CN602	1-691-769-11	PLUG (MICRO CONNECTOR) 7P			
		< DIODE >			
D311	8-719-820-41	DIODE 1SS302-TE85L			
D316	8-719-820-41	DIODE 1SS302-TE85L			
D350	8-719-988-61	DIODE 1SS355TE-17			
D390	8-719-049-09	DIODE 1SS367-T3SONY			
D604	8-719-988-61	DIODE 1SS355TE-17			
D605	8-719-988-61	DIODE 1SS355TE-17			
		< TERMINAL >			
EP370	1-537-738-21	TERMINAL, GROUND			
EP500	1-537-738-21	TERMINAL, GROUND			
		< FERRITE BEAD >			
FB361	1-469-176-21	FERRITE	0uH		
FB362	1-469-176-21	FERRITE	0uH		
FB503	1-216-864-11	METAL CHIP	0	5%	1/10W
FB504	1-216-864-11	METAL CHIP	0	5%	1/10W
FB505	1-216-864-11	METAL CHIP	0	5%	1/10W
FB509	1-216-864-11	METAL CHIP	0	5%	1/10W
FB510	1-469-981-21	FERRITE	0uH		
FB511	1-469-981-21	FERRITE	0uH		
FB512	1-469-981-21	FERRITE	0uH		
FB513	1-469-981-21	FERRITE	0uH		
FB560	1-216-864-11	METAL CHIP	0	5%	1/10W
FB561	1-216-864-11	METAL CHIP	0	5%	1/10W
FB562	1-216-864-11	METAL CHIP	0	5%	1/10W
FB563	1-469-981-21	FERRITE	0uH		
FB600	1-400-392-21	FERRITE	0uH		
FB601	1-400-392-21	FERRITE	0uH		
FB602	1-400-392-21	FERRITE	0uH		
FB603	1-216-864-11	METAL CHIP	0	5%	1/10W
FB604	1-469-981-21	FERRITE	0uH		
FB605	1-469-981-21	FERRITE	0uH		
		< IC >			
IC310	8-759-100-96	IC NJM4558M-TE2			
IC320	8-759-447-30	IC NJM2114M-TE2			
IC380	8-759-701-56	IC TA78M05S			
IC390	8-759-708-06	IC NJM78L06A-T3			
IC391	8-759-700-69	IC NJM79L06A-T3			
IC500	6-701-843-01	IC AK4584VQ			
IC501	6-704-739-01	IC AK4121VF-E2			
IC560	8-759-242-70	IC TC7WU04F (TE12R)			
IC580	6-600-013-01	IC TORX179L (DIGITAL OPTICAL IN)			
IC581	6-600-011-01	IC TOTX179L (DIGITAL OPTICAL OUT)			
IC600	6-803-323-01	IC M30245MC-100GP			
IC650	8-759-598-42	IC TC7WH00FK (TE85R)			
IC680	8-759-640-41	IC BR24C08F-E2			

Ref. No.	Part No.	Description			Remarks
		< JACK >			
J310	1-573-028-31	JACK, PIN 4P (ANALOG)			
		< COIL >			
L536	1-469-981-21	FERRITE	0uH		
L580	1-414-267-21	INDUCTOR	10uH		
		< LINE FILTER >			
LF1	1-419-100-21	INDUCTOR	0uH		
		< TRANSISTOR >			
Q181	8-729-046-97	TRANSISTOR	2SD1938 (F) -T (TX) .SO		
Q191	8-729-046-97	TRANSISTOR	2SD1938 (F) -T (TX) .SO		
Q281	8-729-046-97	TRANSISTOR	2SD1938 (F) -T (TX) .SO		
Q291	8-729-046-97	TRANSISTOR	2SD1938 (F) -T (TX) .SO		
Q350	8-729-028-73	TRANSISTOR	DTA114EUA-T106		
Q360	8-729-028-73	TRANSISTOR	DTA114EUA-T106		
Q650	8-729-046-97	TRANSISTOR	2SD1938 (F) -T (TX) .SO		
Q651	8-729-046-97	TRANSISTOR	2SD1938 (F) -T (TX) .SO		
Q652	8-729-028-73	TRANSISTOR	DTA114EUA-T106		
Q653	8-729-046-97	TRANSISTOR	2SD1938 (F) -T (TX) .SO		
		< RESISTOR >			
R111	1-216-841-11	METAL CHIP	47K	5%	1/10W
R112	1-216-837-11	METAL CHIP	22K	5%	1/10W
R113	1-216-849-11	METAL CHIP	220K	5%	1/10W
R115	1-216-805-11	METAL CHIP	47	5%	1/10W
R170	1-218-871-11	RES-CHIP	10K	2%	1/16W
R171	1-219-266-11	RES-CHIP	100	2%	1/16W
R172	1-218-847-11	RES-CHIP	1K	2%	1/16W
R173	1-218-847-11	RES-CHIP	1K	2%	1/16W
R176	1-218-895-11	RES-CHIP	100K	2%	1/16W
R177	1-219-286-11	RES-CHIP	680	2%	1/16W
R178	1-218-835-11	RES-CHIP	330	2%	1/16W
R181	1-216-833-11	METAL CHIP	10K	5%	1/10W
R191	1-218-835-11	RES-CHIP	330	2%	1/16W
R192	1-216-857-11	METAL CHIP	1M	5%	1/16W
R194	1-216-833-11	METAL CHIP	10K	5%	1/10W
R211	1-216-841-11	METAL CHIP	47K	5%	1/10W
R212	1-216-837-11	METAL CHIP	22K	5%	1/10W
R213	1-216-849-11	METAL CHIP	220K	5%	1/10W
R215	1-216-805-11	METAL CHIP	47	5%	1/10W
R270	1-218-871-11	RES-CHIP	10K	2%	1/16W
R271	1-219-266-11	RES-CHIP	100	2%	1/16W
R272	1-218-847-11	RES-CHIP	1K	2%	1/16W
R273	1-218-847-11	RES-CHIP	1K	2%	1/16W
R276	1-218-895-11	RES-CHIP	100K	2%	1/16W
R277	1-219-286-11	RES-CHIP	680	2%	1/16W
R278	1-218-835-11	RES-CHIP	330	2%	1/16W
R281	1-216-833-11	METAL CHIP	10K	5%	1/10W
R291	1-218-835-11	RES-CHIP	330	2%	1/16W
R292	1-216-857-11	METAL CHIP	1M	5%	1/16W
R294	1-216-833-11	METAL CHIP	10K	5%	1/10W
R370	1-216-797-11	METAL CHIP	10	5%	1/10W
R381	1-216-845-11	METAL CHIP	100K	5%	1/10W
R391	1-216-845-11	METAL CHIP	100K	5%	1/10W
R501	1-216-809-11	METAL CHIP	100	5%	1/10W

MAIN POWER

Ref. No.	Part No.	Description			Remarks
R502	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	
R506	1-216-833-11	METAL CHIP	10K	5%	1/10W
R507	1-216-833-11	METAL CHIP	10K	5%	1/10W
R516	1-216-809-11	METAL CHIP	100	5%	1/10W
R523	1-216-818-11	METAL CHIP	560	5%	1/10W
R538	1-216-864-11	METAL CHIP	0	5%	1/10W
R540	1-218-874-11	METAL CHIP	13K	0.5%	1/10W
R560	1-216-813-11	METAL CHIP	220	5%	1/10W
R561	1-216-809-11	METAL CHIP	100	5%	1/10W
R562	1-216-805-11	METAL CHIP	47	5%	1/10W
R563	1-216-857-11	METAL CHIP	1M	5%	1/10W
R564	1-216-815-11	METAL CHIP	330	5%	1/10W
R580	1-216-817-11	METAL CHIP	470	5%	1/10W
R600	1-216-833-11	METAL CHIP	10K	5%	1/10W
R601	1-216-833-11	METAL CHIP	10K	5%	1/10W
R602	1-216-833-11	METAL CHIP	10K	5%	1/10W
R603	1-216-833-11	METAL CHIP	10K	5%	1/10W
R605	1-216-833-11	METAL CHIP	10K	5%	1/10W
R606	1-216-833-11	METAL CHIP	10K	5%	1/10W
R608	1-216-833-11	METAL CHIP	10K	5%	1/10W
R610	1-216-821-11	METAL CHIP	1K	5%	1/10W
R611	1-216-805-11	METAL CHIP	47	5%	1/10W
R612	1-469-179-21	INDUCTOR, FERRITE BEAD			
R613	1-216-833-11	METAL CHIP	10K	5%	1/10W
R614	1-216-833-11	METAL CHIP	10K	5%	1/10W
R615	1-216-817-11	METAL CHIP	470	5%	1/10W
R617	1-216-805-11	METAL CHIP	47	5%	1/10W
R621	1-216-833-11	METAL CHIP	10K	5%	1/10W
R630	1-216-802-11	METAL CHIP	27	5%	1/10W
R631	1-216-802-11	METAL CHIP	27	5%	1/10W
R632	1-216-823-11	METAL CHIP	1.5K	5%	1/10W
R633	1-216-864-11	METAL CHIP	0	5%	1/10W
R650	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R651	1-216-833-11	METAL CHIP	10K	5%	1/10W
R652	1-216-833-11	METAL CHIP	10K	5%	1/10W
R653	1-216-833-11	METAL CHIP	10K	5%	1/10W
R654	1-216-833-11	METAL CHIP	10K	5%	1/10W
R655	1-216-833-11	METAL CHIP	10K	5%	1/10W
R656	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R657	1-216-833-11	METAL CHIP	10K	5%	1/10W
R658	1-216-809-11	METAL CHIP	100	5%	1/10W
R659	1-216-833-11	METAL CHIP	10K	5%	1/10W
R660	1-216-833-11	METAL CHIP	10K	5%	1/10W
R699	1-216-864-11	METAL CHIP	0	5%	1/10W
		< NETWORK RESISTOR >			
RB507	1-233-576-11	RES, CHIP NETWORK 100			
RB520	1-233-411-11	RES, CHIP NETWORK 220 (3216)			
RB527	1-233-576-11	RES, CHIP NETWORK 100			
RB600	1-236-908-11	RES, CHIP NETWORK 10K (3216)			
RB680	1-236-908-11	RES, CHIP NETWORK 10K (3216)			
		< SWITCH >			
S600	1-571-532-21	SWITCH, TACTIL (for TEST)			
		< VIBRATOR >			
X560	1-767-406-21	VIBRATOR, CRYSTAL (11.2896MHz)			

Ref. No.	Part No.	Description			Remarks
X600	1-577-076-11	VIBRATOR, CRYSTAL (16MHz)			
**********					
	A-4733-662-A	POWER BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
⚠C412	1-100-667-11	ELECT	220uF		400V
⚠C413	1-117-454-11	FILM	4700PF	5.00%	630V
⚠C414	1-104-332-11	CERAMIC	470PF	10.00%	2KV
⚠C415	1-117-699-11	CERAMIC	0.001uF	99%	250V
⚠C420	1-113-900-11	CERAMIC	470PF	10.00%	250V
⚠C421	1-164-230-11	CERAMIC CHIP	220PF	5.00%	50V
⚠C422	1-117-340-91	ELECT	47uF	20.00%	35V
⚠C423	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
⚠C424	1-127-738-91	CERAMIC CHIP	4.7uF	10%	25V
⚠C426	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
⚠C431	1-117-339-91	ELECT	22uF	20.00%	35V
⚠C432	1-164-315-11	CERAMIC CHIP	470PF	5.00%	50V
⚠C433	1-107-974-41	CERAMIC	47PF	5.00%	2KV
⚠C434	1-163-021-91	CERAMIC CHIP	0.01uF	10.00%	50V
C441	1-117-454-11	FILM	4700PF	5.00%	630V
C442	1-128-955-21	ELECT	2200uF	20%	25V
C443	1-128-955-21	ELECT	2200uF	20%	25V
C444	1-115-339-11	CERAMIC CHIP	0.1uF	10.00%	50V
C445	1-164-230-11	CERAMIC CHIP	220PF	5.00%	50V
C446	1-128-955-21	ELECT	2200uF	20%	25V
C448	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C449	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C451	1-128-950-21	ELECT	1000uF	20%	16V
C452	1-128-950-21	ELECT	1000uF	20%	16V
C453	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C454	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C455	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C456	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C461	1-100-118-21	ELECT CHIP	82PF	20%	16V
C462	1-107-823-11	CERAMIC CHIP	0.47uF	10.00%	16V
C463	1-162-924-11	CERAMIC CHIP	56PF	5.00%	50V
C464	1-110-501-11	CERAMIC CHIP	0.33uF	10.00%	16V
C465	1-162-921-11	CERAMIC CHIP	33PF	5%	50V
C466	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C467	1-127-692-11	CERAMIC CHIP	10uF	10%	16V
C468	1-127-573-11	CERAMIC CHIP	1uF	10%	16V
C469	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C470	1-115-339-11	CERAMIC CHIP	0.1uF	10.00%	50V
C471	1-163-037-11	CERAMIC CHIP	0.022uF	10.00%	50V
C472	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C473	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C475	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C476	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C477	1-135-405-91	CERAMIC CHIP	10uF	10%	25V
C478	1-100-421-21	ELECT CHIP	220uF	20%	6.3V
C479	1-128-943-21	ELECT	2200uF	20%	6.3V
C480	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C481	1-100-118-21	ELECT CHIP	82PF	20%	16V
C482	1-135-405-91	CERAMIC CHIP	10uF	10%	25V
C483	1-100-421-21	ELECT CHIP	220uF	20%	6.3V

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

POWER

Ref. No.	Part No.	Description			Remarks
C484	1-128-943-21	ELECT	2200uF	20%	6.3V
C485	1-104-700-11	CERAMIC CHIP	0.027uF	10.00%	16V
C486	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C487	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C489	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C491	1-128-951-21	ELECT	2200uF	20%	16V
C492	1-126-933-11	ELECT	100uF	20.00%	16V
C493	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C494	1-126-916-11	ELECT	1000uF	20.00%	6.3V
C495	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C496	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C499	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C901	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C902	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C941	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C981	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C991	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
		< CONNECTOR >			
CN411	1-564-321-00	PIN, CONNECTOR (3.96mm PITCH) 2P			
CN441	1-691-766-11	PLUG (MICRO CONNECTOR) 4P			
CN442	1-691-766-11	PLUG (MICRO CONNECTOR) 4P			
CN443	1-691-768-11	PLUG (MICRO CONNECTOR) 6P			
CN444	1-691-765-11	PLUG (MICRO CONNECTOR) 3P			
CN445	1-573-768-91	PIN, CONNECTOR 5P			
		< DIODE >			
⚠D411	8-719-312-05	DIODE RBV-606			
⚠D412	6-500-593-31	DIODE 10EDB60-TA1B2			
⚠D413	6-500-593-31	DIODE 10EDB60-TA1B2			
⚠D414	6-500-241-01	DIODE SARS03			
⚠D421	8-719-072-11	DIODE AL01Z-WS			
⚠D422	8-719-072-11	DIODE AL01Z-WS			
⚠D423	8-719-072-11	DIODE AL01Z-WS			
⚠D431	8-719-072-11	DIODE AL01Z-WS			
⚠D432	8-719-083-67	DIODE UDZSTE-1720B			
⚠D433	8-719-820-05	DIODE 1SS181-TE85L			
D441	8-719-080-05	DIODE FMB-26L			
D461	8-719-065-59	DIODE MBR0530T1			
D462	8-719-072-83	DIODE MBRS340T3			
D471	8-719-820-05	DIODE 1SS181-TE85L			
D472	8-719-820-05	DIODE 1SS181-TE85L			
D491	6-500-131-01	DIODE LI116			
		< TERMINAL >			
EB421	1-537-738-21	TERMINAL, GROUND			
EB451	1-537-738-21	TERMINAL, GROUND			
EB491	1-537-738-21	TERMINAL, GROUND			
		< FERRITE BEAD >			
FB451	1-469-450-21	FERRITE	0uH		
FB452	1-469-450-21	FERRITE	0uH		
FB461	1-469-176-21	FERRITE	0uH		
		< IC >			
IC421	6-702-385-01	IC STR-F6267S			
IC431	6-703-560-01	IC STR-A6359			

Ref. No.	Part No.	Description			Remarks
IC441	6-700-388-01	IC SE-B2			
IC461	6-702-259-01	IC TPS5103IDBR			
IC471	8-759-349-11	IC PST9145NL			
IC472	8-759-824-69	IC PST9245NL			
IC481	6-704-562-01	IC TPS62056DGSR			
IC491	8-759-641-26	IC NJM2391DL1-33 (TE1)			
		< COIL >			
⚠L441	1-428-923-11	INDUCTOR	10uH		
⚠L461	1-424-918-21	INDUCTOR	10uH		
L462	1-456-065-21	INDUCTOR	22uH		
L481	1-424-918-21	INDUCTOR	10uH		
L482	1-424-918-21	INDUCTOR	10uH		
L491	1-414-398-11	INDUCTOR	10uH		
		< IC >			
⚠PC411	8-749-019-04	IC TLP421			
⚠PC431	8-749-019-04	IC TLP421			
		< TRANSISTOR >			
⚠Q421	8-729-904-54	TRANSISTOR	DTB143EK-T-146		
⚠Q431	8-729-027-23	TRANSISTOR	DTA114EKA-T146		
Q461	8-729-054-66	TRANSISTOR	HAT2071R-EL		
Q462	8-729-054-66	TRANSISTOR	HAT2071R-EL		
Q491	8-729-900-53	TRANSISTOR	DTC114EKA-T146		
		< RESISTOR >			
⚠R411	1-245-573-81	METAL OXIDE	150K	5%	2W
⚠R413	1-216-803-11	METAL CHIP	33	5%	1/10W
⚠R421	1-216-813-11	METAL CHIP	220	5%	1/10W
⚠R422	1-216-365-00	METAL OXIDE	0.47	5%	2W
⚠R423	1-216-365-00	METAL OXIDE	0.47	5%	2W
⚠R424	1-216-823-11	METAL CHIP	1.5K	5%	1/10W
⚠R425	1-216-847-11	METAL CHIP	150K	5%	1/10W
⚠R426	1-216-830-11	METAL CHIP	5.6K	5%	1/10W
⚠R427	1-218-869-11	METAL CHIP	8.2K	0.5%	1/10W
⚠R431	1-216-809-11	METAL CHIP	100	5%	1/10W
⚠R432	1-216-819-11	METAL CHIP	680	5%	1/10W
⚠R433	1-249-389-11	CARBON	4.7	5%	1/4W F
⚠R434	1-216-811-11	METAL CHIP	150	5%	1/10W
⚠R435	1-245-574-81	METAL OXIDE	220K	5%	2W
R441	1-218-869-11	METAL CHIP	8.2K	0.5%	1/10W
R442	1-218-839-11	METAL CHIP	470	0.5%	1/10W
R443	1-218-839-11	METAL CHIP	470	0.5%	1/10W
R444	1-218-857-11	METAL CHIP	2.7K	0.5%	1/10W
R461	1-218-853-11	METAL CHIP	1.8K	0.5%	1/10W
R462	1-216-820-11	METAL CHIP	820	5%	1/10W
R463	1-216-847-11	METAL CHIP	150K	5%	1/10W
R464	1-216-835-11	METAL CHIP	15K	5%	1/10W
R465	1-216-846-11	METAL CHIP	120K	5%	1/10W
R466	1-216-833-11	METAL CHIP	10K	5%	1/10W
R467	1-216-833-11	METAL CHIP	10K	5%	1/10W
R468	1-218-867-11	METAL CHIP	6.8K	0.5%	1/10W
R469	1-216-805-11	METAL CHIP	47	5%	1/10W
R470	1-218-895-11	METAL CHIP	100K	0.5%	1/10W
R471	1-218-871-11	METAL CHIP	10K	0.5%	1/10W

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

POWER

Ref. No.	Part No.	Description			Remarks
R472	1-218-867-11	METAL CHIP	6.8K	0.5%	1/10W
R473	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R474	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R475	1-216-864-11	METAL CHIP	0	5%	1/10W
R477	1-216-813-11	METAL CHIP	220	5%	1/10W
R480	1-218-865-11	METAL CHIP	5.6K	0.5%	1/10W
R481	1-218-829-11	METAL CHIP	180	0.5%	1/10W
R482	1-216-813-11	METAL CHIP	220	5%	1/10W
R491	1-216-821-11	METAL CHIP	1K	5%	1/10W
R991	1-216-833-11	METAL CHIP	10K	5%	1/10W
R992	1-216-833-11	METAL CHIP	10K	5%	1/10W
		< TRANSFORMER >			
⚠T411	1-439-988-11	TRANSFORMER, DC CONVERTER			
⚠T431	1-439-581-11	TRANSFORMER, DC/DC CONVERTER			
		< THERMISTOR >			
⚠TH411	1-803-916-11	THERMISTOR, NTC			

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MISCELLANEOUS
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101	1-796-775-11	DRIVE, CD-ROM
102	1-796-792-11	DRIVE, HARD DISK
107	1-827-513-11	WIRE (FLAT TYPE)(17 CORE)
108	1-827-496-11	WIRE (FLAT TYPE)(19 CORE)
⚠155	1-777-071-21	CORD, POWER
⚠158	1-770-019-11	ADAPTOR, CONVERSION PLUG 3P (UK)
⚠F401	1-576-622-11	FUSE (T2AL/250V)

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ACCESSORIES
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⚠	1-469-089-11	FILTER, CLAMP (FERRITE CORE)
	1-478-161-11	COMMANDER, STANDARD (RM-D56M) (INCLUDING BATTERY COVER)
	1-574-264-12	CORD, OPTICAL PLUG (DIGITAL OPTICAL)
⚠	1-770-019-11	ADAPTOR, CONVERSION PLUG 3P (UK)
	1-790-735-12	CORD, CONNECTION (AUDIO)
	1-823-975-11	CORD, CONNECTION (USB)
	4-247-167-11	CD-ROM
	4-249-904-11	MANUAL, INSTRUCTION (ENGLISH)
	4-249-904-21	MANUAL, INSTRUCTION (FRENCH, SPANISH, GERMAN, DUTCH)(AEP)
	4-249-904-31	MANUAL, INSTRUCTION (ITALIAN, SWEDISH, POLISH)(AEP)

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.